

USER'S GUIDE

G-FORCETM
O3C **COMBO**

IT'S LIKE FOUR EXPANSION BOARDS IN ONE SLOT



***G-Force
68030
Combo
Accelerator***
**for the
Amiga 2000**

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This product requires removal of the Amiga 2000's case and physical installation inside the computer. Installation of this product requires some degree of mechanical ability and precautions against electrostatic discharge. The user assumes all risks when this installation is performed by anyone other than a certified GVP dealer.

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CHAPTER 1.

INTRODUCTION

Thank you for purchasing the GVP G-Force 68030 Combination board for the Amiga 2000. This product represents the most highly integrated system enhancement available on a single expansion card. Its features include:

- High performance Motorola 68030 Central Processing Unit and optional 68882 Floating Point Unit chips to maximize system throughput
- Up to 16 Megabytes of onboard 32-bit wide FAST RAM
- GVP's custom designed 60 nanosecond 4-Megabyte "SIMM32" memory expansion modules for easy installation
- GVP's custom designed Very Large Scale Integration (VLSI) Dual Ported RAM Controller chip (DPRC) for lowest possible component count
- GVP's autobooting DMA SCSI controller
- GVP's FaaastROM and FaaastPrep SCSI software technology
- Surface Mount Technology for more reliable assembly and reduced cost to the user
- 6-layer Printed Circuit Board for maximum system integration

Memory Management Unit:

68030 with integral MMU

68EC030 without MMU

Memory Configurations

1 MB installed expandable to 13 MB

4 MB installed expandable to 16 MB

Each different configuration, in its day, offered the best price/performance ratio available for Amiga expansion products. The current board is no exception.

CHAPTER 2

GETTING STARTED

Follow these steps to get your new G-Force '030 Combo accelerator up and running in the quickest possible fashion. We recommend you read each relevant passage in this manual thoroughly before attempting to perform the steps described. **Take all noted precautions to prevent damage to your equipment.**

- 1) Check all Combo board jumper settings against those specified in *Chapter 3 – Configuration*. If you are adding components — like RAM or a math coprocessor — at this time, follow the procedures detailed in *Chapter 3*.
- 2) If you are adding one or more hard drives to your system, follow one of the procedures described in *Chapter 4 – Hardware Installation*.
- 3) Install the correctly configured Combo board into your Amiga by following the procedure described in *Chapter 4 – Hardware Installation*.
- 4) Perform the *Power-Up test* described in *Chapter 5*.
- 5) Install G-Force support software as described in *Chapter 6 – Software Installation*.
- 6) Refer to *Chapters 7 and 8* for details on the use of *FaaastPrep* SCSI drive preparation software and G-Force control utilities.

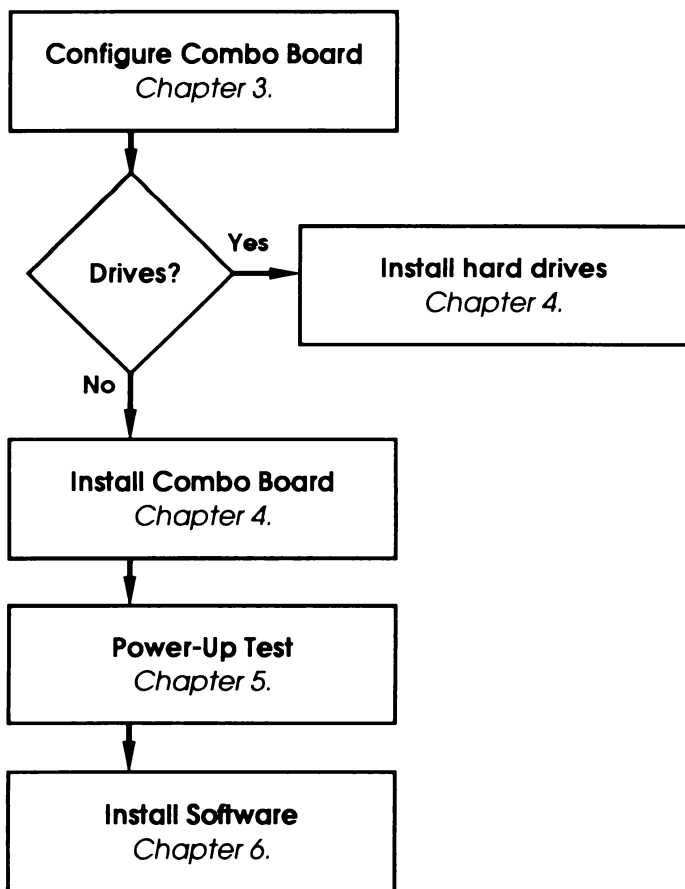


Figure 2.1 – Getting started flow chart.

CHAPTER 3.

CONFIGURATION

Possible configurations described

As previously noted, the '030 Combo board has been offered in a number of different configurations. These are always subject to change, depending on the pricing and availability of key components. Presently, the G-Force '030 Combo is available in three product levels:

Entry Level:

- 25 MHz 68EC030
- 1 MB RAM installed
- 68882 math coprocessor

Intermediate Level:

- 40 MHz 68EC030
- 4 MB RAM installed
- 68882 math coprocessor

High Performance Level:

- 50 MHz 68030
- 4 MB RAM installed
- 68882 math coprocessor

The following chapters describe generic procedures that apply to Combo boards of all product Levels. Where necessary, specific, Level-dependent, details are noted as special cases.

The Entry level board is intended to provide the budget-conscious user with an entry point into accelerated Amiga performance. It includes the basic building blocks and can grow incrementally along with the user's requirements and financial resources.

NOTE: The Entry level G-Force Combo board comes configured with one Megabyte of 32-bit wide memory. Since GVP expansion RAM is sold in 4 Megabyte Single Inline Memory Modules (SIMMs), Entry level boards are limited to a maximum of 13 Megabytes (1 MB + 4 MB + 4 MB + 4 MB).

Entry level boards shipped without a math coprocessor can be upgraded with the addition of a MC68882 floating point unit. This chip may be operated at the main CPU clock rate or independently clocked by supplying a separate crystal oscillator and setting Jumper CN16. The full procedure for upgrading to a math coprocessor is detailed below.

CAUTION: 68030 accelerator boards use CMOS technology electronic components. They are extremely sensitive to static discharge or physical shock. Always be sure to ground yourself by touching a metal surface prior to handling the board or its components. Do not drop or physically jar the board or its components. Failure to observe these precautions may result in irreparable damage to the Combo Board.

“What you need”

In most cases, no tools are required to configure a G-Force '030 Combo board. It is always a good idea, when handling electronic components, to use a suitably grounded anti-static wrist strap. If you do not use an anti-static strap, make sure to touch some grounded metal surface prior to handling RAM SIMMs or other parts.

Jumpers

The G-Force Combo board can be configured by the user in a number of different ways. These include different populations of memory modules, different math coprocessor clock settings, automatic booting from Hard Disk, etc. All these settings are accomplished through the use of *jumper pins* and *shorting blocks*.

Scattered around the board are a number of upright metal pins. These are connection points for various open circuits on the board. To configure certain options, you can install a shorting block onto a pair of pins, completing the circuit.

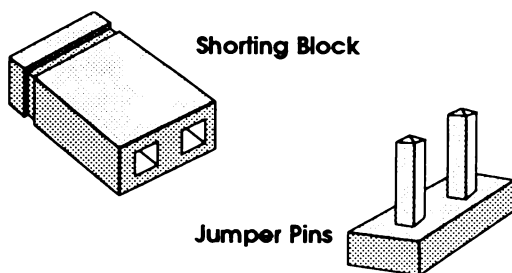


Figure 3.1 – Jumper block and pins.

CAUTION: This diagram shows all available jumper and pin locations. Many of the pins on the Combo board are reserved by GVP. Never indiscriminately apply jumper blocks to any set of pins on the Combo board. GVP will not be responsible to repair boards damaged as a result of tampering with reserved jumper settings.

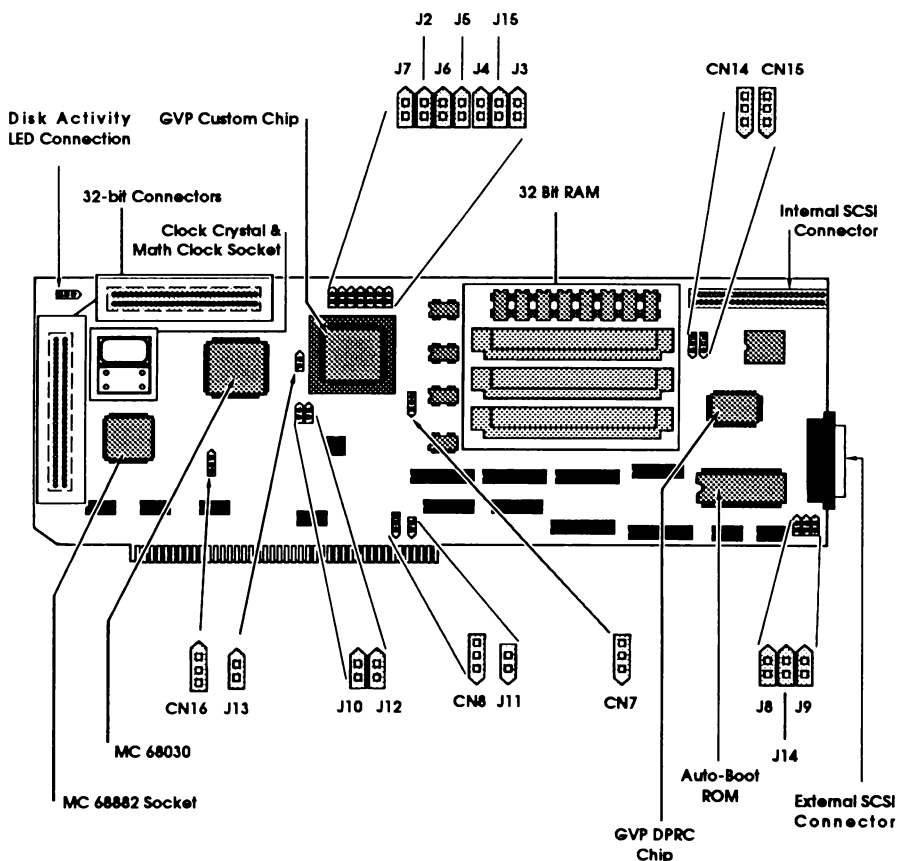


Figure 3.2 - '030 Combo board showing jumper locations.

Table 3.1 – Combo board jumper assignments.

Jumper	Open Position	Closed Position	Factory Default
J2	GForce030 Disabled	GForce030 Enabled	Closed
J3	MMU Enabled	MMU Disabled	Open
J7	RESERVED	RESERVED	Open
J8	Omni ROM (AT/SCSI)	SCSI ROM	Open
J9	ROM Disabled	ROM Enabled	Closed
J10	RESERVED	RESERVED	Open
J11	RESERVED	RESERVED	Open
J13	RESERVED	RESERVED	Open
J14	SCSI Drive Connected	SCSI Drive Disconnected	Open or Closed *
J15	RESERVED	RESERVED	Open
Jumper	Pins 1 & 2	Pins 2 & 3	
CN7	RESERVED	RESERVED	Pins 1 & 2 shorted
CN14	RESERVED	RESERVED	Pins 2 & 3 shorted
CN15	RESERVED	RESERVED	Pins 1 & 2 shorted +
CN16	Separate 68882 clock	68882 uses CPU clock	Pins 2 & 3 shorted
LED	Connect SCSI hard disk drive read/write indicator LED.		

* Open if at least one SCSI drive is connected to the accelerator and closed if no SCSI devices are connected to the accelerator.

+ Pins 1 & 2 with FastROM 4.5, or Pins 2 & 3 with any previous version.

CAUTION: Be sure to short only the two pins on a single jumper block. Serious damage could result from shorting pins from two adjacent jumpers.

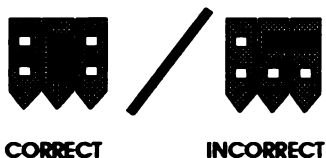


Figure 3.3 – Correct and incorrect jumper installation.

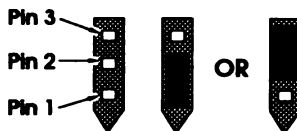


Figure 3.4 – Correct 3-pin jumper installations.

Table 3.1 shows those jumper settings common to 25, 40 and 50 MHz Combo boards. Table 3.2 contains board specific jumper information. Except for memory configuration and, possibly, 68882 math chip options, the factory settings should not be altered.

Table 3.2a – Board Specific jumpers for 25 and 40 MHz Combos.

25 MHz COMBO BOARD

Jumper	Open Position	Closed Position	Factory Default
J4	RESERVED	RESERVED	Closed
J5	RESERVED	RESERVED	Closed
J6	RESERVED	RESERVED	Open
J12	All Banks as Extended	Bank 1 or 2 as Auto-config	Closed
Jumper	Pins 1 & 2	Pins 2 & 3	
CN8	RESERVED	RESERVED	Pins 2 & 3

40 MHz COMBO BOARD

Jumper	Open	Closed	Factory Default
J4	RESERVED	RESERVED	Closed
J5	RESERVED	RESERVED	Open
J6	RESERVED	RESERVED	Closed
J12	Banks 1 & 2 as Extended	Banks 1 & 2 as Auto-config	Closed
Jumper	Pins 1 & 2	Pins 2 & 3	
CN8	RESERVED	RESERVED	Pins 2 & 3

Table 3.2b – Board Specific jumpers for 50 MHz Combo.

50 MHz COMBO BOARD

Jumper	Open	Closed	Factory Default
J4	RESERVED	RESERVED	Closed
J5	RESERVED	RESERVED	Closed
J6	RESERVED	RESERVED	Closed
J12	Banks 1 & 2 as Extended	Banks 1 & 2 as Auto-config	Closed
Jumper	Pins 1 & 2	Pins 2 & 3	
CN8	RESERVED	RESERVED	Pins 1 & 2

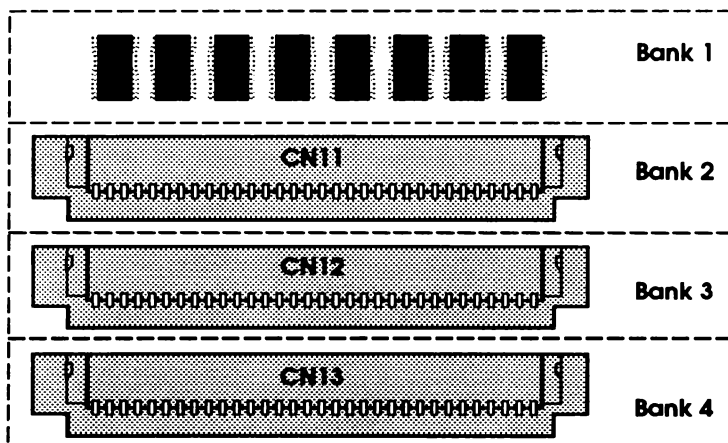


Figure 3.5 – G-Force '030 Combo board RAM Bank arrangement.

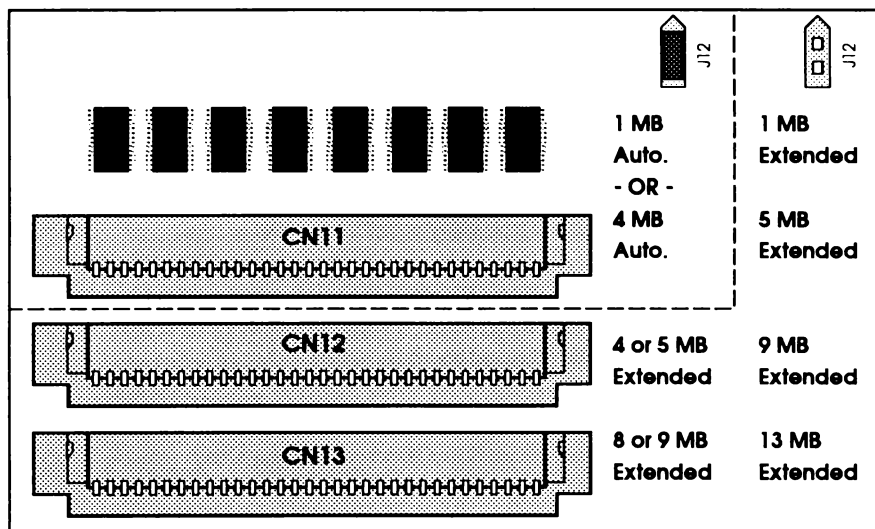


Figure 3.6 – Effect of jumper J12 on 25 MHz Combo RAM.

target computer and used the high-order address bits in unauthorized ways. The most surprising “32-bit impure” program is AmigaBASIC.

Some programs, while they cannot access or use memory beyond the Auto-config range will operate happily by ignoring Extended memory. Such programs will work fine on a Combo board equipped system. If your Combo board is configured with all its RAM in Auto-config space, then you should have no problems with any existing software; even “32-bit impure” programs. Only systems with Extended RAM may experience compatibility problems.

While there is no way to fix “broken” software, a general rule of thumb applies when selecting software for use on your system:

If a program runs correctly on an Amiga 3000, it will also work with the GVP '030 Combo board.

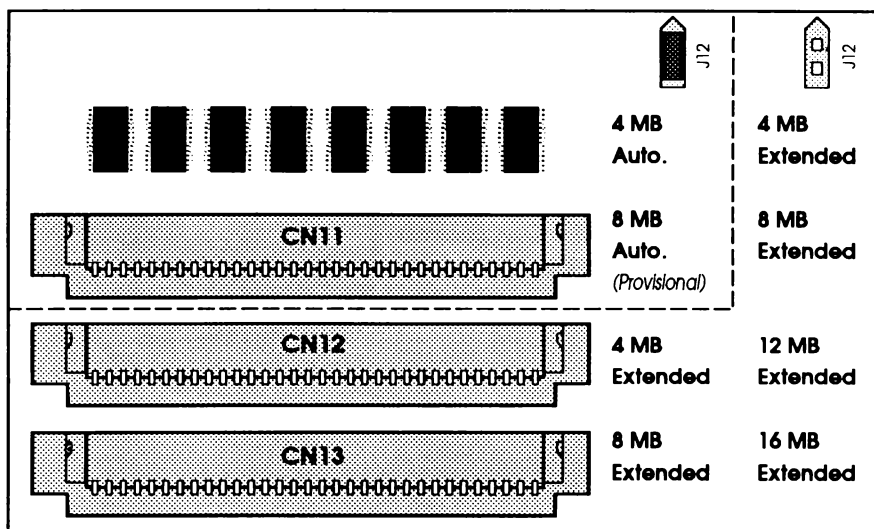


Figure 3.7 – Effect of jumper J12 on 40 and 50 MHz Combo RAM.

Adding 32-bit wide RAM

All G-Force '030 combo boards come with 3 sockets for adding up to 12 Megabytes of 32-bit wide memory configured in *Single Inline Memory Modules (SIMMs)*. The SIMM package is a convenient, cost-effective, relatively rugged component with a high degree of reliability. They are much easier to install than most single-chip arrangements.

A *GVP SIMM-32* consists of eight tiny memory chips mounted on a single small printed circuit board. All of the connection points for the memory chips are arrayed along one edge of the SIMM and mate with the contacts of a matching SIMM socket on the Combo board. These SIMM sockets can be populated one at a time, as finances permit, or all at once.

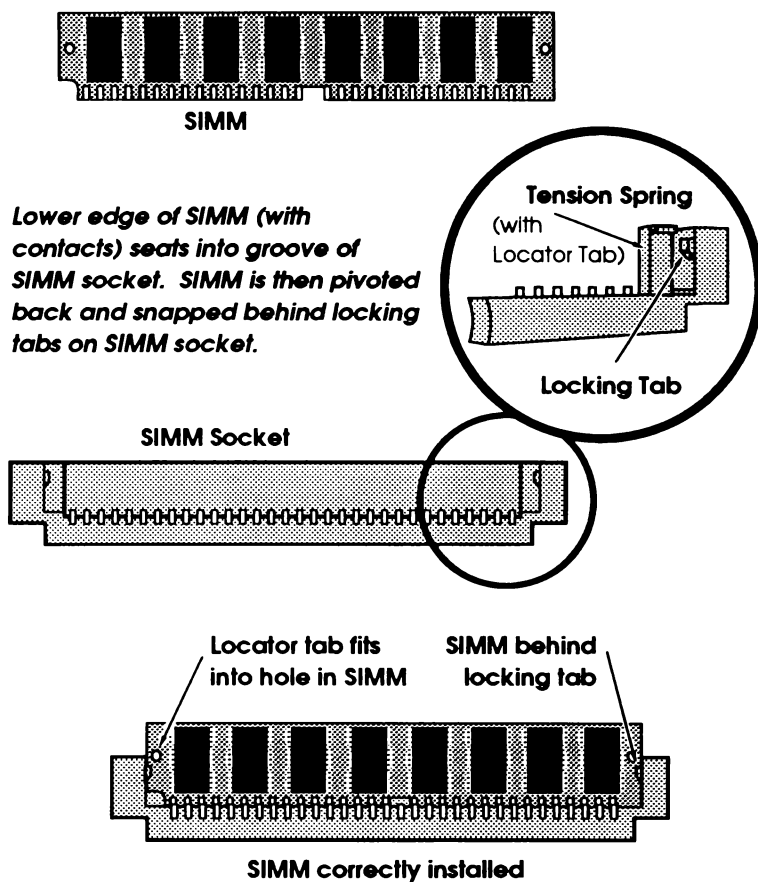


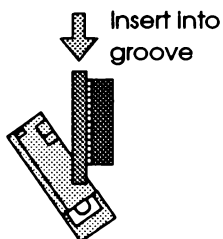
Figure 3.8 – SIMMs, Sockets and installation.

Installation procedure:

- 1) If you are not using an anti-static wrist strap, be sure to ground yourself before touching the Combo board or any of its components.

- 2) Lay the Combo board on the anti-static envelope it came packaged in.
- 3) Note the location of the SIMM sockets in the upper right-hand quadrant of the Combo board. The sockets are numbered from top to bottom in ascending order. The sockets must be used in order from top to bottom (*unless jumper JP12 is set and you already have between one and four Megabytes of RAM present in Auto-config space*).
- 4) The SIMMs are designed to fit into the sockets one way only. They slide in easily and, when rotated toward the board, snap into place. Figure 3.8 shows the SIMM and Socket in detail.

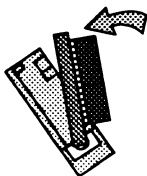
Orient the first SIMM such that the memory chips are facing you and the edge with the silver contacts is pointing down. These contacts will mate with the corresponding connectors inside the socket.



Step 4.
(Side View)

- 5) With the SIMM correctly seated, rotate it toward the board.

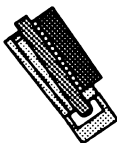
Rotate back
toward board



Step 5a.
(Side View)

The SIMM will move only a few degrees before the retaining tabs snap into place.

SIMM snaps
into place.



Step 5b.
(Side View)

These tabs secure the SIMM into position and ensure proper contact between the SIMM and socket connectors.

- 6) Repeat this procedure for any other SIMMs you wish to install at this time. Be sure to correctly set jumper J12 for Extended or Auto-config RAM.

Adding a 68882 Math Chip

In the interest of economy, some Entry Level 25 MHz G-Force '030 Combo boards do not include a MC68882 floating point co-processor. As mentioned previously, this chip can be added at any time. GVP has also provided a means of driving the math chip at its own clock rate. This can be faster than the CPU clock rate, if the user has access to faster rated chips; or slower, if the user has a chip rated lower.

CAUTION: Do not attempt to drive any processor chips beyond their rated speeds. Doing so can result in intermittent program lockups and premature circuit failure.

The 68882 is a *Pin Grid Array* chip; a flat ceramic package with many short pins jutting out the bottom. The Combo board has a square plastic socket perforated with holes into which the 68882 can be set. There is an index numeral 1 on the board at one corner of the socket and this matches one corner of the chip which is "keyed" with a gold marker. It is extremely important to inspect the chip for bent pins, since they all must be perfectly straight for the chip to fit the socket correctly.

NOTE: Some Combo boards may have a bright metal "can" shielding the processor chips. This is a guard against radio-frequency emissions that could, otherwise, cause interference with radio or television signals. If such a shield is present, carefully pry off the lid to gain access to the 68882 math chip socket.

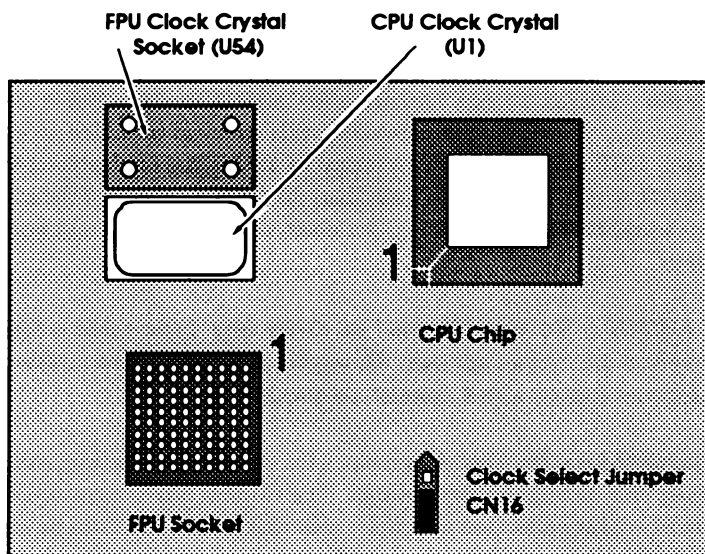


Figure 3.9 – Combo board CPU, FPU and clock crystals.

Installation Procedure

- 1) If your Combo board has a radio frequency interference (RFI) shield, carefully remove the cover and set it aside.
- 2) Locate the components identified in Figure 3.9.
- 3) Orient the 68882 chip so that its key aligns with the key on the socket (as indicated by a number 1 silkscreened in white ink on the board, itself).

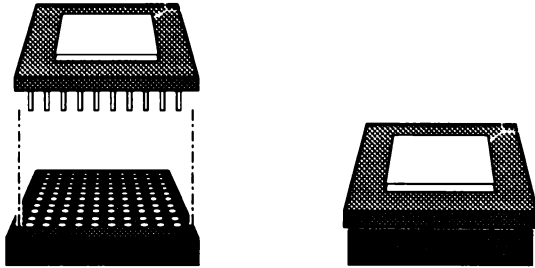


Figure 3.10 – Inserting 68882 FPU.

- 4) Take care that all the pins on the 68882 FPU are straight and fit them into the holes in the FPU socket.
- 5) Press evenly, stopping periodically to inspect your work and make sure that no pins are bent or missed their holes. Continue pressing until the chip is fully seated.
- 6) The 68882 math chip installation is now complete. If you removed the cover from a RFI shield, be sure to replace it before installing your Combo board.

Separate Clock Crystal

If you plan to clock your 68882 floating point unit at a rate other than the main CPU clock rate, you will need to provide your own clock crystal.

Jumper CN16 tells the Combo board which clock crystal socket to use for the 68882 math chip. Install your clock crystal into the second crystal socket (*U54*) and move the shorting block on jumper CN16 from its factory setting (*pins 2 & 3*) to pins 1 & 2.

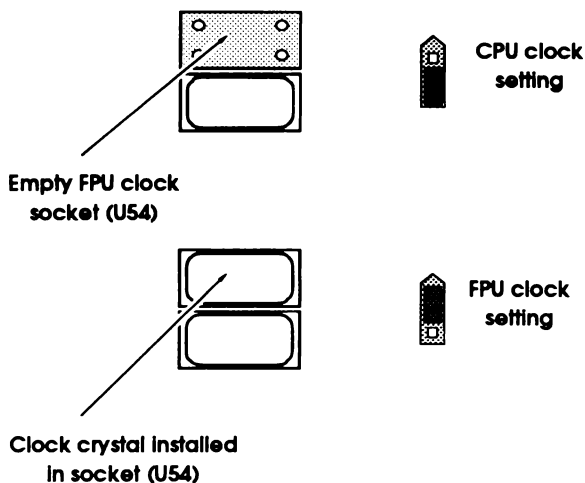


Figure 3.11 – FPU clock settings.

SCSI

The G-Force '030 Combo board uses a high-performance SCSI II controller for interfacing hard drives and other data input or output equipment. This manual discusses setting up a SCSI hard drive, but many other types of devices can also communicate across the SCSI data bus.

SCSI stands for *Small Computer Standard Interface* and is the general term for an industry-wide specification governing how certain devices should be connected to one another. The SCSI standard specifies a 50-wire data bus that can connect up to a maximum of 8 separate individual devices. The controller, itself, is always counted as one of these 8 devices.

Hard drives & other devices

By far, the most common type of SCSI device is a hard disk drive. Hard disks make available to computer users far greater amounts of

data storage than conventional floppy disks. They are also much faster at finding and relaying data than floppy drives.

SCSI is not limited to hard disks, however. Equipment manufacturers have produced SCSI document scanners, printers, CD-ROM drives, and tape backup units. All these different types of devices can cohabit peacefully attached to the same SCSI bus, as long as they conform to the standard SCSI protocols.

Bus dynamics

The SCSI bus is a high-speed, two-way communications channel between the controller and the other connected devices. The Combo board controller arbitrates the selection and transfer of data to or from each device and feeds it to the Amiga through 32-bit wide DMA accesses. Any or all of the 7 external units may be active and communicating at once, with the controller determining which one gets the bus at what time.

The GVP Combo board has connections for both an internal SCSI data bus (*using a 50-pin ribbon cable*) to connect SCSI devices inside the computer's case, and a 25-pin DB-style connector for the addition of external SCSI devices. The 25-pin connector uses a subset of the full 50-pin SCSI specification, but has become something of an industry standard for SCSI on other computer platforms.

Unit IDs

In order to keep track of all the devices attached to the SCSI bus, each one must have a unique ID number. Usually, this ID number corresponds with its position in the chain of devices, but not necessarily. Acceptable SCSI ID numbers are 0-7. The Combo board's SCSI controller, itself, will always be designated as ID #7. The remaining available ID numbers are 0-6. Most users will start numbering their SCSI drives from 0 (*e.g.: DH0:, DH1:, CD2:, etc.*).

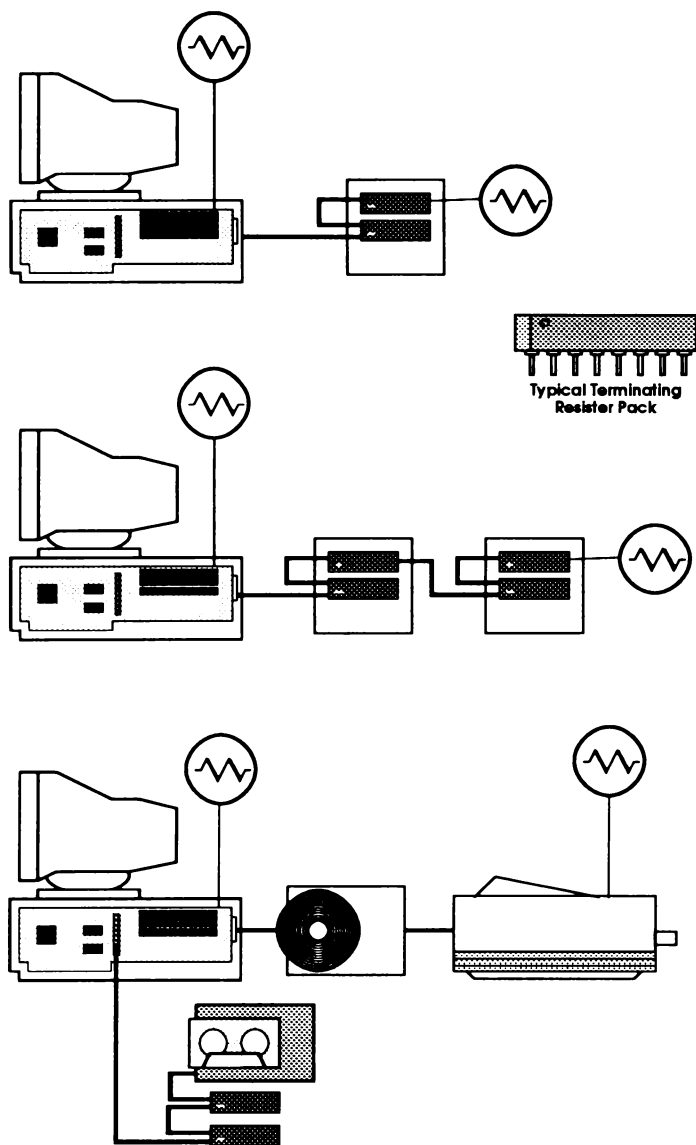


Figure 3.12 – SCSI bus connections and termination.

follows will discuss attaching and mounting hard drives to the 50-pin ribbon connector on the SCSI controller's internal bus. **These users will want to remember to remove the shorting block from jumper J14.** This tells the board that a SCSI drive is attached.

When the Combo board is installed, the 25-pin DB connector will extend out the rear panel of the Amiga, providing a plug-in entry point for more or less standard external SCSI devices. These devices usually employ a 25-pin DB to 50-pin Centronics-type cable, shielded against radio frequency interference.

Autoboot vs. Manual Mount & Boot

The Combo board can be set to automatically boot from a SCSI hard drive attached to the board's built-in SCSI controller. When this option is enabled (*Jumper J9 shorted*), the board will also locate and mount all other SCSI devices that may be attached.

If Autoboot is disabled by removing the shorting block from jumper J9 (*if, for some reason, you prefer to boot from another drive connected to*

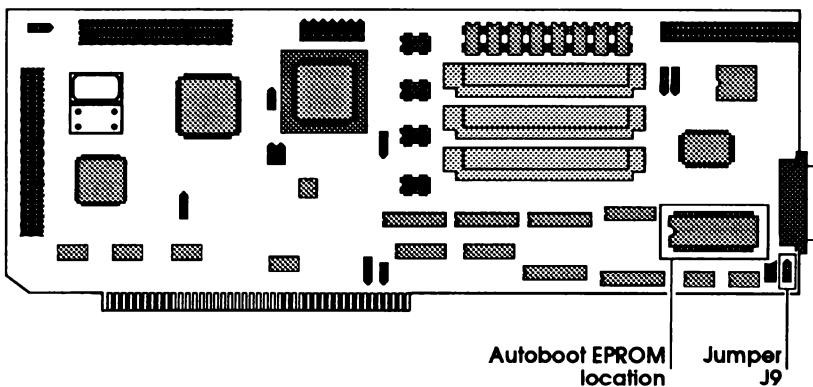


Figure 3.13 – Location of Autoboot EPROM.

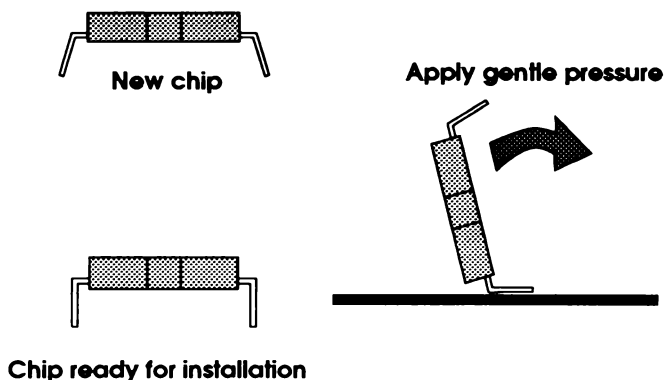


Figure 3.14 – Preparing Autoboot ROM for insertion.

Making sure to align the two notches, insert the EPROM chip's pins into the holes of the socket. Be sure that they are all correctly aligned and no pins are bent. Then press the chip firmly into its socket. When done, inspect your work to ensure that none of the pins bent underneath or were broken.

RDB & Expansion drawer

When a SCSI drive has been properly prepped and formatted, certain details will be written directly on the drive in a sector called the *Rigid Disk Block (RDB)*. When the Autoboot EPROM begins the boot process, it polls all the devices it finds attached to the SCSI bus. Each time it finds a device at one of the SCSI addresses, it tries to read the RDB to find out what the device looks like. In this way, the Combo board is able to bring up your system quickly with all its attached devices properly recognized and ready for use.

When the Autoboot EPROM is disabled, the Combo board is not able to automatically find and mount any attached drives or devices. Instead, your Amiga must control the process by accessing a software

CHAPTER 4.

HARDWARE INSTALLATION

“What you need”

You will need a medium sized cross-point screwdriver to install the G-Force '030 Combo board.

Amiga A2000 procedure

This chapter will present the necessary steps to follow when installing a G-Force '030 Combo board into an Amiga A2000. It is not meant to supercede any disassembly/assembly instructions provided by Commodore.

- 1) Remove the screws from the computer's cover. There are 5; one at top center on the rear panel, and two along the bottom edge of each side.

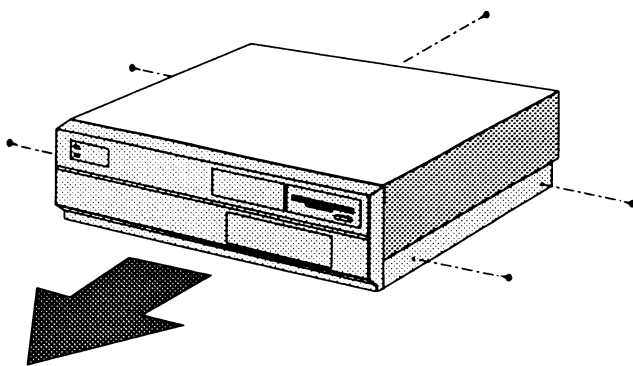


Figure 4.1 – A2000 cover screws

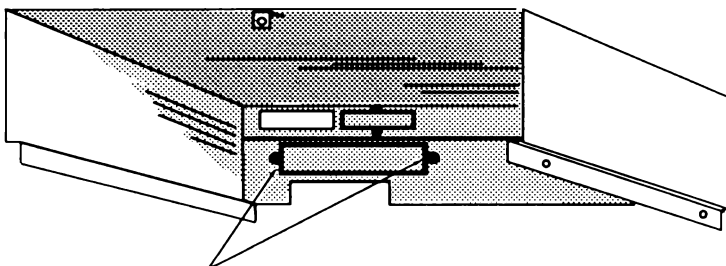
- 2) Remove the cover by pulling forward and away.

Installing Drives

Those who intend to install SCSI hard drives at this time should follow *Step 3*. If you are not installing any SCSI drives at this time, proceed to *Step 4*.

NOTE: If you are installing one or more SCSI drives at this time, you should already have removed the shorting block from jumper J14 (refer to Figure 3.2). Failure to do this will prevent your hard drives from being recognized by the Combo board's SCSI controller.

- 3a) Prepare the case by removing either the 5.25" or 3.5" plastic filler plate from the front panel.



Remove 2 screws.

Figure 4.2 – Remove drive bay cover plate.

The Amiga drive mounting stage is a two-tiered platform that affords a relatively easy access to the upper 3.5" drive bays and rather more difficult access to the lower 5.25" bay. If you will be installing a device in the lower bay, take some time to note the position and configuration of any other expansion boards you may have installed in your system.

Having recorded these particulars, remove the boards and put them somewhere safe. This will provide room for you to work around the lower drive bay. Remember that most electronic components are easily damaged by static shock.

Be sure you have correctly configured the Combo board and that the hard drive (*or other device*) you are mounting is also configured appropriately. This involves setting its jumper IDs and, possibly, installing or removing terminating resistors. These items are described in the *SCSI* section of *Chapter 3*. Refer to the documents that came with your drives for correct procedures to make these settings.

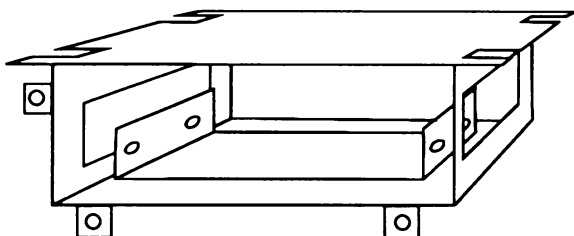


Figure 4.3 – Amiga 2000 Hard Drive Stage.

Mounting a 3.5" hard drive

- 3b) The upper tier of the Hard Drive Stage is attached to the lower by two screws on either side (*see Figure 4.4 at top of next page*).
- 3c) Install a 3.5" drive in the vacant upper bay. Orient the drive so that its 50-pin connector is pointed toward the rear of the computer. Locate the four mounting holes on the underside of the drive with the holes in the upper drive tier. The spacing for these holes is industry standard and the drive will fit if it is oriented correctly.

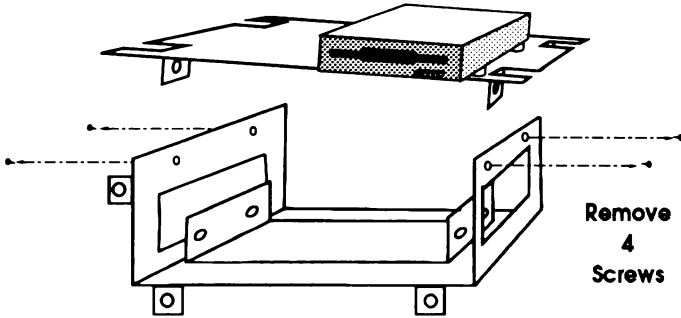


Figure 4.4 – Upper tier removal.

3d) Secure the drive with four screws.

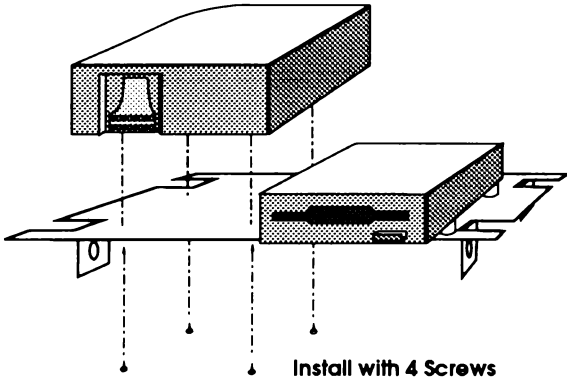


Figure 4.5 – Upper tier drive installation.

Mounting a 5.25" hard drive

3e) The upper tier of the Hard Drive Stage should be removed to ease access to the lower tier mounting rails. remove two screws from either side of the Drive Stage and lift off the upper tier. Be careful not to disturb the wires connected to your Amiga's floppy drive.

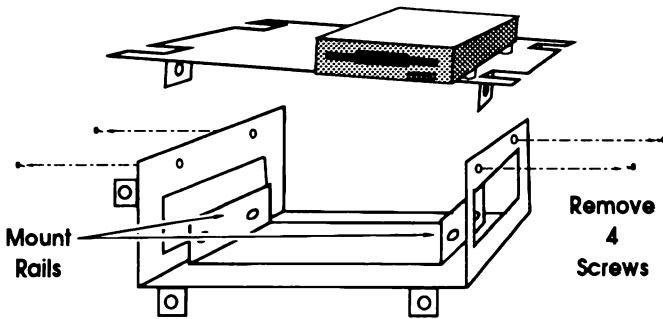


Figure 4.6 – Upper tier removal showing mount rails.

A 5.25" hard drive or other SCSI device (e.g.: CD ROM or tape drive) will fit between the two mounting rails of the lower drive bay. A 3.5" device will also fit, if the user provides an appropriate adapter bracket.

NOTE: It is best to remove all expansion cards from your system before working around the lower drive bay. Mounting screws must be reached from an angle perpendicular to the rails and this is only possible when there are no printed circuit boards in the way.

- 3f) Slide the 5.25" drive in between the pair of mounting rails. Orient the drive so that its 50-pin connector points toward the back of the computer. Locate the holes on the sides of the drives with the mounting slots on the rails and thread in four screws. *Do not tighten them just yet.*

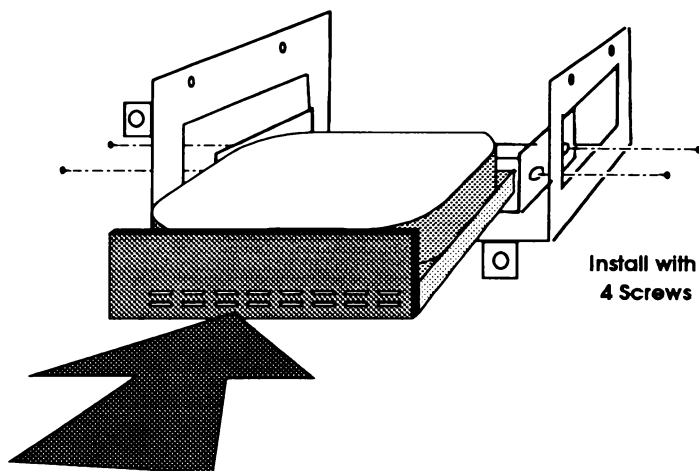


Figure 4.7 – Installing drive in lower bay.

NOTE: The rails are drilled with lengthened slots, allowing the drive to be adjusted forward or back. This allows the drive to mate flush with the front panel when the Amiga's cover is installed.

- 3g) Test the drive's final position by temporarily replacing the cover. When the fit is flush, tighten the mounting screws.

When all drives have been properly installed, reattach the Drive Stage upper tier to the lower part.

Piggy Back Drive

GVP makes available an optional bracket for mounting a low-profile 3.5" drive directly on the Combo board itself. This bracket offers a "no-slots-lost" solution to the problem of a severely overcrowded machine.

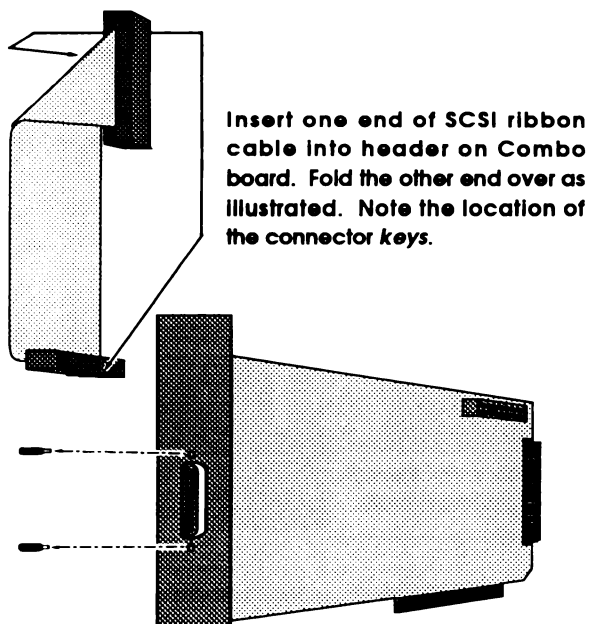


Figure 4.9 – Remove original mounting bracket.

- 3k) Hook the Piggy Back bracket over the top edge of the card and slide the elliptical hole in the bracket's rear mounting plate over the 25-pin DB-style SCSI connector (*Figure 4.10*).

NOTE: The bracket has standoffs and alignment guides at its bottom edge and a standoff mounting iron toward the center rear. It is important to adjust the bracket's position on the board so that the standoff irons make contact with the back surface of the board while the alignment guides fit smoothly against the bottom edge of the board (see *Figure 4.11*). This alignment is critical if the Combo board is to seat properly into the Amiga's CPU slot.

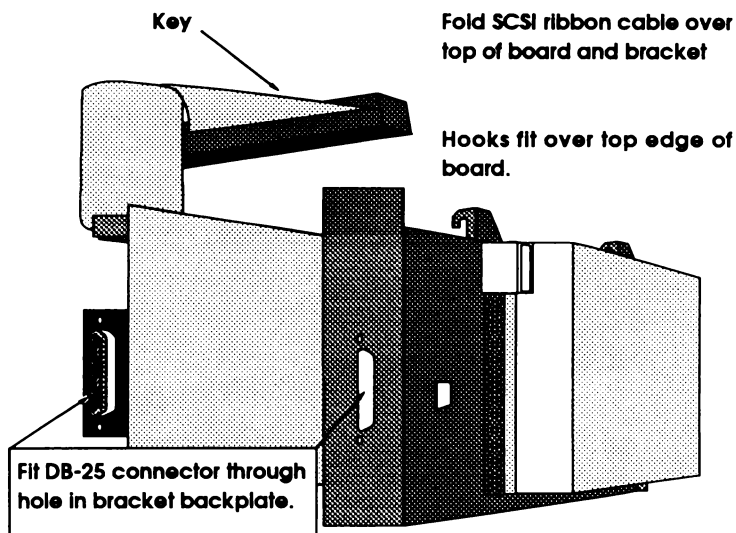


Figure 4.10 – Guide Piggy Back bracket onto Combo board.

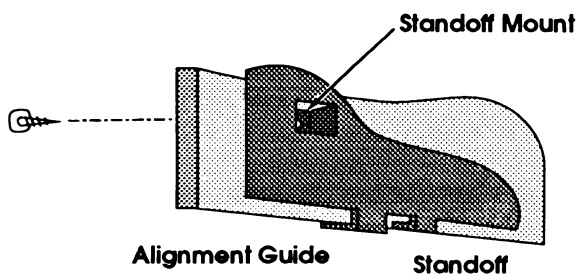


Figure 4.11 – Standoffs and Alignment guide detail.

- 3l) Secure the Piggy Back bracket to the Combo board using the supplied self-tapping machine screw and the original mounting bracket nuts.

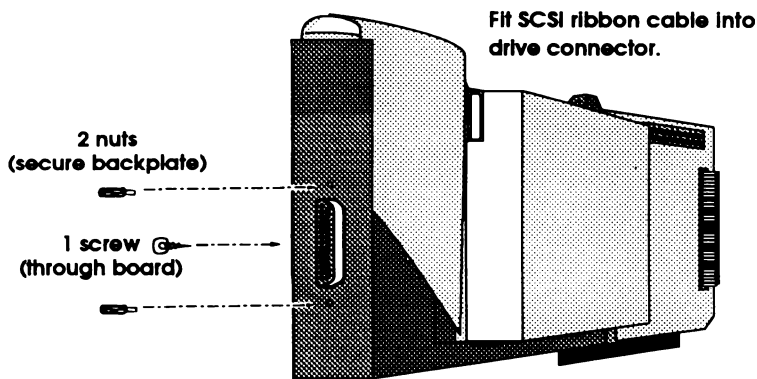


Figure 4.12 – Piggy Back bracket installed.

Cabling Hard Drives

Each internally mounted SCSI device must now be connected to the SCSI bus 50-wire ribbon cable. Each must also be powered. Commodore provides a lengthy cable with two connectors appropriate for hard drives as an integral part of the A2000 power supply. It is not recommended to power more than two devices in this way.

- 3h) Locate the hard drive power cable and thread it to the appropriate location of your hard drive(s). The nylon connector is standard and will fit one way only. Press until the connector is firmly seated. Do not overstress the connection!

The SCSI bus connector has polarity and one of its edges should be marked to indicate *Pin-1*. It is important to correctly match Pin-1 on the cable with Pin-1 on the drive. Pin-1 on the drive may be marked in a number of ways (see *Figure 4.13*).

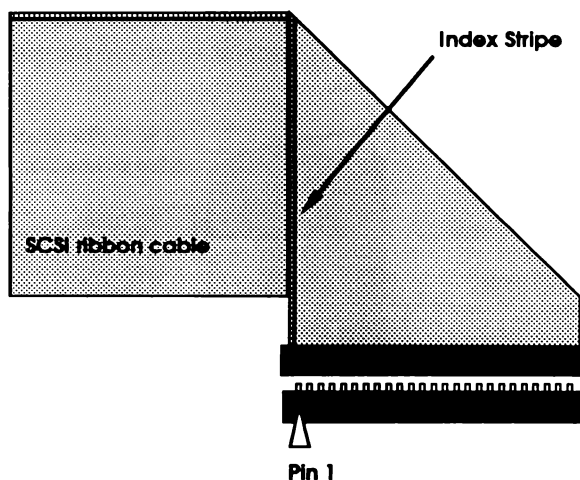


Figure 4.13 – SCSI cable Pin 1 arrangement.

Most SCSI manufacturers now use a bus connector “keyed” with a slot on one side. This slot matches a raised key on the ribbon cable connector. Such an arrangement prevents incorrect connections.

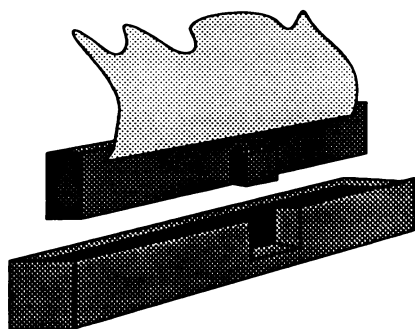


Figure 4.14 – Slot and Key cable connections.

Final Installation

Now we are ready to actually install the Combo board into the Amiga A2000. Observe all previous cautions concerning electrostatic discharge and damage to the board.

The '030 Combo board uses the A2000's Processor Direct slot (*see Figure 4.15*). This is the multi-pin bus connector closest to the Drive Stage. There is only one way the board can fit into this slot.

- 4) Remove 2 screws and cover plate from rear panel (*see Figure 4.15*).

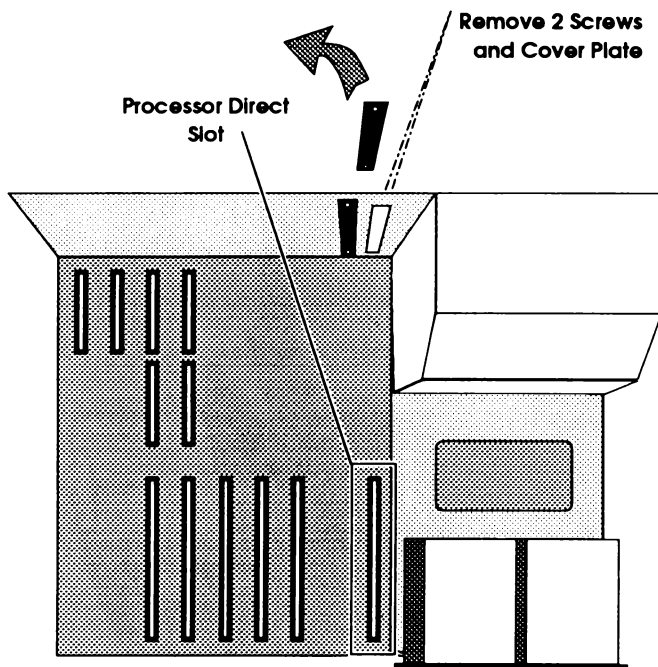


Figure 4.15 – Processor Slot location.

- 5) Fit front edge of board into the plastic guide on the front panel of your Amiga.
- 6) Locate the combo board into the CPU slot (*closest to Drive Stage*).

NOTE: Take care to guide the DB-25 external SCSI connector through the hole in the rear panel. The fit may be tight and may require careful manipulation of the board.

- 7) Take care that the Combo board's edge connector and the Processor slot are properly aligned. Press the Combo board firmly into the CPU slot. Do not overstress the motherboard.
- 8) Secure the board with the rear-panel cover plate screws.

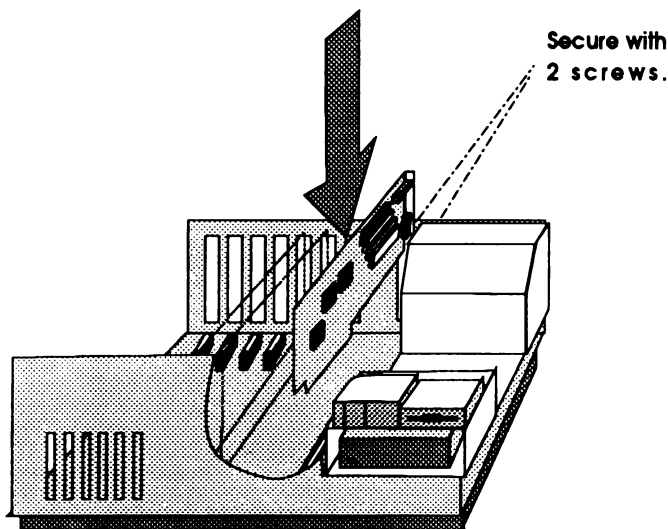


Figure 4.16 – Final Installation.

CHAPTER 5

Power Up Test

With the G-Force '030 board installed, reconnect the power and input device cables to your Amiga. If the '030 board is correctly configured and installed, you should be able to boot up from the supplied floppy disk and load Workbench. In the next chapter, we will discuss the installation and use of particular software that allows you to take full advantage of the G-Force accelerator.

For the present, however, we are only interested in demonstrating that the board is correctly installed. Simply booting under ordinary Workbench control is sufficient for this task.

CAUTION: If, for any reason, your machine does not boot normally, power down immediately. Disconnect the power cables and reinspect your work. Make sure to check the following items:

- 1) The Board is correctly placed and firmly seated into the Processor Direct slot.
- 2) All memory SIMMs are correctly installed.
- 3) All jumpers are correctly configured per the description in Chapter 3.
- 4) All appropriate data and power cables and other expansion boards removed during the installation are reinstalled correctly and no pins are bent or broken.

When your Amiga boots and operates normally with the G-Force Combo board installed, proceed to *Chapter 6 – Software Installation*.

Disk Contents

With the G-Force '030 Combo board installed, insert the included distribution disk into your Amiga's floppy boot drive (*DF0:*) and power up the machine. When the Workbench appears, double-click on the icon representing the G-Force distribution disk.

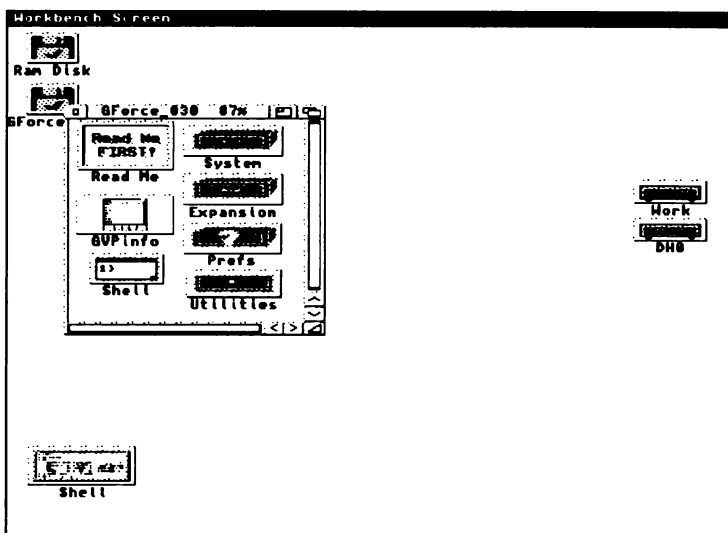


Figure 6.1 – Contents of '030 Combo distribution disk.

In the window that opens, you will see a drawer that contains the '030 Combo board *Utilities*. There may also be a *ReadMe* file containing any late-breaking information that may have developed since this manual was printed. Before proceeding, check this file. It may be read by clicking twice on its icon. Doing so loads *More*, the text reader program.

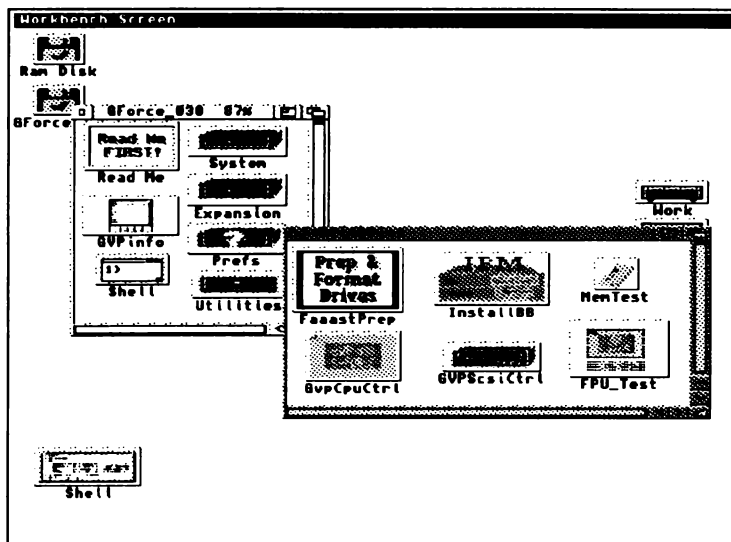


Figure 6.2 – Contents of the Utilities drawer.

The Utilities drawer contains the files *GVPCpuCtrl* and *FaaastPrep*. *GVPCpuCtrl* is normally inserted into your system startup routine and executed every time the computer is powered up or reset. *FaaastPrep* is GVP's standard utility for the set-up, formatting and management of hard drives. It is normally run once at the time of SCSI controller installation, but will also need to be used any time a new hard drive is added to your system. *FaaastPrep*'s operation is the subject of *Chapter 7*.

We have also included a few additional utilities for monitoring your system's configuration and performance. These tools will be detailed in *Chapter 8 – Other Utilities*.

Floppy Boot Disk

Users of floppy based systems will most likely have more than one system or startup disk. Often, an application's Program disk is used for booting. Such users should use the AmigaDOS Shell to copy *GVPCpuCtrl* into the *c:* directory of each separate boot disk:

```
copy GForce030:Utilities/GVPCpuCtrl MyBootDisk:c
```

If you have more than one Megabyte of FAST RAM, you should also edit the file *s:startup-sequence* on each boot disk to include the following line:

```
GVPCpuCtrl FASTROM
```

This tells your G-Force board to make a RAM-based copy of your Amiga's ROMs and to redirect all system calls to it. The FASTROM option usually increases performance several hundred percent. The remainder of GVPCpuCtrl's functionality is documented in *Chapter 8*.

Whether to copy the other provided utilities is left to the user's discretion. Often, a floppy boot disk will not have more than a few bytes to spare. In such cases, GVPCpuCtrl should be the only G-Force command present. Users can control other aspects of the accelerator using the AmigaDOS command *CPU* (*SetCPU*, under *Workbench version 1.3*). Most floppy users will not have much immediate need for FaaastPrep. It, and the other utilities can be kept on the GForce030 disk until needed.

Refer to *Chapter 8* for further information on GVPCpuCtrl and the other utilities provided on the GForce030 disk. Otherwise, until you can afford the addition of a hard drive, you are off and running!

Hard Drive Users

The G-Force '030 Combo accelerator will achieve its highest level of performance with one or more hard drives attached to its SCSI controller. If you are upgrading an existing hard drive system, be sure to back up all your data before attempting to use FaaastPrep. Otherwise, new and experienced hard drive users should follow these steps.

First Time Hard Drive users

If you have installed a hard drive that has never been used before, the first thing you will need to do is format the drive. This process is fully described in *Chapter 7 – FaaastPrep*. When the drive is formatted and “prepped,” return to the next section of this chapter and continue on from there.

Existing Hard Drive users

If you already have a functioning hard drive system, you should choose one of the following methods:

- 1) Disable G-Force autobooting and keep your existing controller and hard drive setup. Auto-boot can be disabled by installing jumper *J14* from the G-Force board (*see Table 3.1*).

With autoboot disabled on the G-Force board, your system should boot in its normal fashion. Skip ahead to the next section in this chapter.

- 2) Back up all existing data, attach your hard drive(s) to the G-Force board and discard the existing controller. Then, re-enable auto-booting by removing jumper *J14* and use *FaaastPrep*, as described in *Chapter 7*, to reformat each drive.

Installing Software

This section describes installing the supplied G-Force utility programs onto a working hard drive. If you have not yet formatted your hard drives, refer to the preceeding section of this chapter. If you are installing the G-Force software on a pre-existing hard drive attached to another SCSI controller, you may follow the procedures described below; however, you may need to make adjustments appropriate to your own system.

Most of the G-Force support utilities can be installed on a hard disk by dragging their icons on the Workbench. A simpler and more effective way to manage this installation, however, is by using the AmigaDOS *Shell*.

The program GVPCpuCtrl should be copied to your hard drive into a drawer that is in the current command *path* (e.g.: *c:*). This can be done using the AmigaDOS Shell command *copy*. For example, if your boot partition is named BOOT, the command would be:

```
copy GForce030:Utilities/GVPCpuCtrl to BOOT:c
```

The other utilities can all be copied into your hard disk's Utilities directory (*or anywhere else you choose*), by entering the following command:

```
copy GForce030:Utilities to BOOT:Utilities ALL
```

Use of the ALL directive will ensure that all the utilities and any required files will be copied in a single operation. Once this has been done, your G-Force installation is complete. Refer to *Chapter 8* for more complete information on the functionality and use of the G-Force utility software. Otherwise, you are off and running!

CHAPTER 7.

FAAASTPREP

The first major utility program included on the G-Force '030 Combo distribution disk is GVP's standard hard drive mounting and formatting utility, *FaaastPrep*. FaaastPrep is a windowed, Intuition driven program providing many user controllable options for configuring hard drives to your liking.

Any time you add a new hard drive to your system (*or wish to redefine or reformat an existing drive*), you must use FaaastPrep. FaaastPrep has two operating modes: Automatic and Manual. The Automatic mode makes a number of assumptions on behalf of the novice user, greatly simplifying the process. Manual mode is designed to provide maximum configurability for hard drive experts.

This software, FaaastPrep version 1.98m, is the latest available from GVP. This release constitutes an upgrade of existing software and as such, implements bug fixes and minor enhancements.

Drive Requirements

Recall, from Chapter 3, that each device needs to have its SCSI ID set by shorting jumpers. SCSI ID numbers vary from zero to seven. However, the GVP SCSI controller itself is mapped as ID 7, so no SCSI device can use this ID. Make sure that each device's ID is different from all the rest. Refer to the manual that came with each device to determine the correct procedure for setting Unit ID.

Another important thing to check is that the termination resistors on each SCSI device are removed, except for the last one in the daisy chain. Refer to the manual that came with your drive or device for the procedure for locating and removing termination resistors.

Anatomy of a Hard Drive

In order to better understand and use FaaastPrep, a discussion of the way data is organized on a hard drive is in order. The “anatomy” of a hard drive can be explained in terms of a standard 3.5” Amiga diskette. An Amiga disk has several characteristics.

Surfaces

A floppy disk consists of a single “platter.” It has two surfaces, that is, a top and a bottom. Both are coated with a magnetic-oxide compound that is capable of storing the magnetic patterns that disk-drives and computers use for the representation of data.

Hard drives can have anywhere from one to many platters, each with two surfaces. These are stacked, vertically, like records on an automatic changer.

Tracks & Cylinders

Amiga floppies have 80 “*tracks*” on each of the two sides of the disk. These are concentric circles going from the outside of the disk (*track 0*) to the inside (*track 79*). Because there are two sides on the disk, however, it is more correct to say that there are 160 tracks per disk. Tracks that are above and below each other make up a “*cylinder*.” When someone mentions AmigaDOS diskettes going from track 0 to track 79, they are actually talking about the number of cylinders the disk has.

Hard drives have many tracks on them, and since it is cumbersome to consider each track on each surface of every platter in a hard drive, it is common to group tracks together and to consider the aggregate of all the tracks on all the platters in cylinders. In FaaastPrep, partition capacities are measured in cylinders.

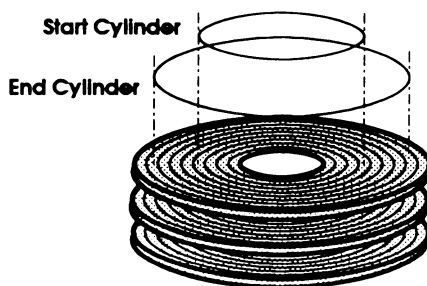


Figure 7.1 – Simplified hard drive arrangement.

Sides, Sectors & Blocks

In order to distinguish individual tracks on a cylinder, we refer to them as “*sides*.” An Amiga floppy has two sides, side 0 (*the top*), and side 1 (*the bottom*). Hard drives have as many sides as they have surfaces. For example, a six platter hard drive would have twelve sides.

Tracks are further divided into *sectors*. Amiga floppies have 11 sectors per track. Sectoring breaks the information on a disk into small enough units that any particular piece can be individually located and used in a minimal amount of time. Generally, the sectors are one of two possible sizes:

- The AmigaDOS *Old File System* has been in use since the introduction of the very first Amigas. Old File System has 488 usable bytes per sector.
- The *Fast File System* was introduced with AmigaDOS version 1.3. It is more efficient and leaves 512 usable bytes per sector.

Using FaaastPrep

Now you're ready to use FaaastPrep. The first thing you'll need to do is get it running. Insert the FaaastPrep disk, turn on any external hard drives, and boot your Amiga.

From the Workbench, double-click on the installation disk icon, then open the *Utilities* drawer and double-click on the FaaastPrep icon to bring up the main screen of the program.

If you choose to run the program from the CLI, do the following:

```
CD df0: <return>
FaaastPrep <return>
```

You will be presented with FaaastPrep's main screen.

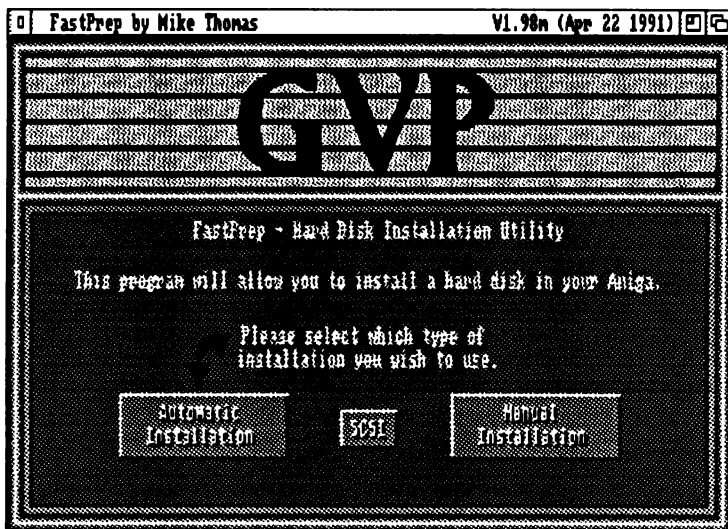


Figure 7.2 – FaaastPrep's Main Screen.

The main screen of FaaastPrep has 3 buttons and a title-bar menu.

Automatic Installation Button:

Clicking on this button initiates the Automatic mode of FaaastPrep.



Manual Installation Button:

Clicking on this button starts up the Manual version of FaaastPrep.



AT/SCSI Button:

Clicking on this button toggles FaaastPrep between communicating with *SCSI* controllers and *AT/IDE* controllers. Some GVP accelerators and hard drive controllers offer a combination of SCSI and AT/IDE driver circuitry. The current G-Force '030 Combo boards support only SCSI drives.



SCSI

This button tells FaaastPrep it is talking to a SCSI controlled hard disk system.

AT/IDE

AT/IDE controllers are typically associated with IBM PC compatible computers. Like SCSI, AT/IDE is an industry standard specification designed to ensure compatibility of hardware from many different manufacturers. The AT/IDE standard can often be faster than SCSI, as information is transferred 16 bits at a time, while SCSI is only 8 bits. GVP SCSI controllers, however, are so highly optimized that they frequently perform faster than comparable AT/IDE systems.

The AT/IDE specification will permit just one controller and a maximum of 2 hard drives to be present in your system. AT/IDE supports hard drives only.

When the button says “AT,” FaaastPrep will change its internal settings to deal with the change in standards. Also, in Manual Mode, you will not be able to use the Bad Block remap or Low Level format, since these features are not supported by AT/IDE drives.

If you click on the Automatic or Manual Buttons with the SCSI/AT button on “AT,” and your present hardware does not support AT/IDE, FaaastPrep will let you know this by putting up a requester. Click on the *Proceed* button to continue. Reset the SCSI/AT gadget to SCSI and re-select the preferred FaaastPrep option.

Titlebar Menu

FaaastPrep’s main screen has a titlebar menu. It has two options.



Binddrivers

Selecting the Binddrivers menu option is equivalent to issuing the AmigaDOS command of the same name. In systems without Auto-boot capability, hard disk controllers are added to the system resources list through the use of software drivers and the Binddrivers command. For Binddrivers to be of use, however, there must be two key files present in your system:

- The GVP software driver *GVPScsi*, which resides in the Expansion drawer of the FaaastPrep distribution disk, must be copied to the Expansion drawer of your *sys:* system disk.
- Your *devs:* directory must also contain a file called mountlist, that contains all the proper specifications for any hard drives connected to your system. FaaastPrep will automatically create a mountlist for each drive it preps and formats and this will be placed in the root directory of the drive.

It *will not* re-format, or destroy any information that may already be on the drive. You should only need to Reprep if you are moving a hard drive with data from another system to your own or are upgrading to a newer controller ROM.

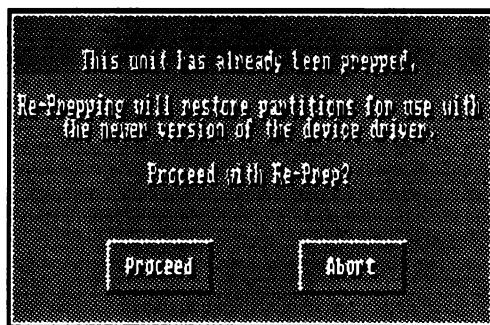


Figure 7.4 – Should FaaastPrep re-prepare the drive?

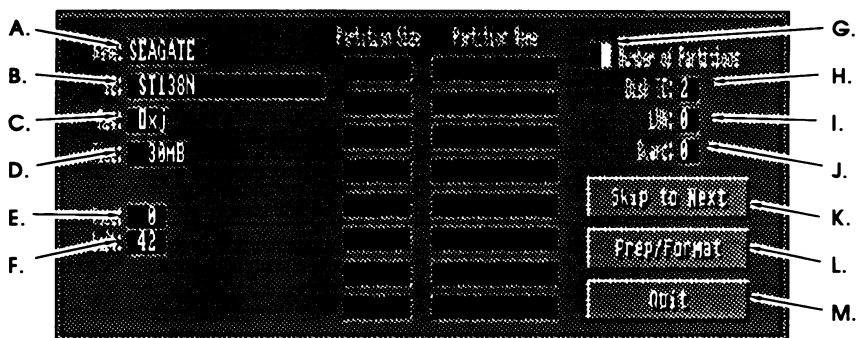
If you don't want to re-prepare the drive, click "Abort."

The next requester is a warning that if you click the *Prep/Format* button (*on the bottom right of the following screen*), you will lose all the data on the drive.

Click on "Proceed" to continue.

If your drive is not prepped

If your drive is not prepped (or if you chose to RePrep, as described above), you will be presented with a screen like this:



- | | |
|--------------------------------|---------------------------|
| A. Drive manufacturer | G. Number of partitions |
| B. Drive Model number | H. Drive Unit ID number |
| C. Revision number | I. Logical Unit number |
| D. Size in Megabytes | J. Board ID number |
| E. Size assigned to partitions | K. Skip to next partition |
| F. Size unassigned (available) | L. Prep and Format drive |
| | M. Quit FaaastPrep |

Figure 7.5 – The Automatic mode FaaastPrep screen.

Automatic mode Text fields and Buttons

In addition to the partition list boxes, which will be described below, there are 10 text fields on the automatic screen. There are also three buttons.

To change any information in a text field, begin by positioning the mouse pointer over the box you wish to change and click the left

Size LeftA rectangular button with a black background and white text. The text reads "Left: 42".

The Size Left text field keeps track of how many Megabytes are still available for use. As you enter new values in the Partition Size fields, this number will get smaller.

Number of PartitionsA rectangular button with a black background and white text. The text reads "Number of Partitions".

This field allows you to set or modify the number of partitions on a hard drive unit.

Disk IDA rectangular button with a black background and white text. The text reads "Disk ID: 2".

This field allows you to directly enter the SCSI ID number of the unit you wish to work on. If your system contains a number of hard drives, it may be easier to reach a particular unit by typing in its ID number, rather than letting FaaastPrep cycle systematically through the chain.

LUNA rectangular button with a black background and white text. The text reads "LUN: 0".

This field allows you to enter the Logical Unit Number of the SCSI ID that you are working on. SCSI devices that support LUNs are quite rare and most users will want to leave this field set to zero.

BoardA rectangular button with a black background and white text. The text reads "Board: 0".

This field allows you to enter the ID of the SCSI controller board you wish to work on. It is possible to have more than one SCSI controller and bus active in your system. In such cases, each controller must have a unique ID number. This text field lets you directly address any of 8 (0–7) separate controller cards.

Skip To NextA rectangular button with a black background and white text. The text reads "Skip to Next".

This Button, when clicked, sends Faaast-Prep to the next active SCSI device attached to the current controller card. When you reach the end of this

chain, you will receive a message that there are no more preppable drive available. To go back to the beginning of the list, enter the number 0 in the *Disk ID* field.

Prep/Format

Clicking on this button begins the prep/format procedure described below.

A rectangular button with a dark background and a light border. The text "Prep/Format" is displayed in a light, monospaced font.

Quit

Clicking on this button terminates Faaast-Prep.

A rectangular button with a dark background and a light border. The text "Quit" is displayed in a light, monospaced font.

Prep/Reprep

“Preparation,” or reparation, is the process by which we make changes to the information on the main screen that determines the physical layout and format of the drive.

You will notice that there is a cursor displayed in the box next to the words “Number of Partitions.”



Figure 7.6 – Enter number of desired partitions.

Setting Partitions

Before proceeding, you need to decide how many partitions you want to create on this drive. You must create at least one, but may have as many as 8 separate partitions. You may choose to use multiple partitions to organize your programs and data files, or to keep everything in separate directories (*drawers*) within a single partition.

Example:

```
15 DH0  →  10 DH0
15 Work  →  20 Work
```

Press return when you are finished entering the first size. The cursor will automatically move to the right, to allow you to change the name of the partition. By default, FaaastPrep will automatically set the partition name to DH x : where x is a number from 0–7.

A new *partition name* may be anything you wish, up to 12 characters. Remember that a partition name is different from a volume name. The *volume name* can be changed with the CLI *relabel* command or the Workbench *rename* command; a partition name cannot be changed except through FaaastPrep. Initially, FaaastPrep will set the volume name to the partition name.

Many people prefer to keep their partition names short; just three or four characters. When you press return again, the cursor will move to the size field of the next partition. If the cursor is at the last partition's name field, when you press return, it will move back to the first partition's size field.

When all the partition names and sizes are specified as you wish, click on the button marked *Prep/Format*.



You will be asked if you're sure that you want to complete this operation. Click on "Proceed" if you want to continue, otherwise click on "Abort."

FaaastPrep will first write the *Rigid Disk Block* and *Partition blocks*. It will then mount and format each partition in order.

NOTE: If the partition name is already in use, FaaastPrep will append an extra letter to your specified partition name as it is mounted.

When FaaastPrep formats and mounts each partition on the hard-drive, it creates a file called “mountlist” in the *RAM:* Drive. This file is also written to the partition, itself. This mountlist file should be copied to a storage diskette for safe keeping.

In the event that the RDB or partition blocks become corrupted, and you are not able to autoboot or automount the drive, the mountlist may be used to manually mount the drive. A suggested place to store these mountlists is on a copy of the GForce030 disk.

Copying disks to the hard drive

When FaaastPrep has finished formatting the hard disk, you will be asked if you want to copy any floppies to it.

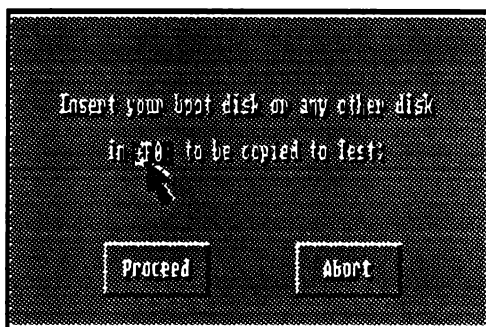


Figure 7.8 – Copy disks requester.

Additional Drives

FaaastPrep will then attempt to find any more preppable drives attached to the selected SCSI board. If there are no more available, it will display a requester to this effect, and wait for you to click on "Proceed."

This concludes the procedure for prepping a hard drive in the automatic mode. The following paragraphs detail the title-bar menu options.

Titlebar Menus

FaaastPrep, in Automatic mode, has one menu: *Select*.



Title Screen

This returns you to the opening screen of FaaastPrep. The keyboard shortcut for Title Screen is *Right-Amiga-T*.

Mountlist

The Mountlist Command creates a mountlist for the currently selected SCSI device on the RAM: drive. This file should be copied to a storage diskette for safe keeping.

In the event that the RDB or partition blocks become corrupted, and you are not be able to autoboot or automount the drive, the mountlist may be used to manually mount the drive. A suggested place to store these mountlists is on a copy of the GForce030 disk. The keyboard shortcut to generate a Mountlist is *Right-Amiga-M*.

BootFloppy

The BootFloppy command is needed for those users operating under Kickstart 1.2. Kickstart 1.2 does not allow hard drives to autoboot, and requires the presence of a floppy disk in drive DF0:. BootFloppy modifies the startup-sequence of a copy of the GVP.Install disk to automatically mount and transfer control to the hard drives. The keyboard shortcut for creating a bootable floppy is *Right-Amiga-B*.

Quit

This command terminates FaaastPrep. The keyboard shortcut for Quit is *Right-Amiga-Q*.

MANUAL MODE

When you enter the Manual mode in FaaastPrep, the screen will look like this:

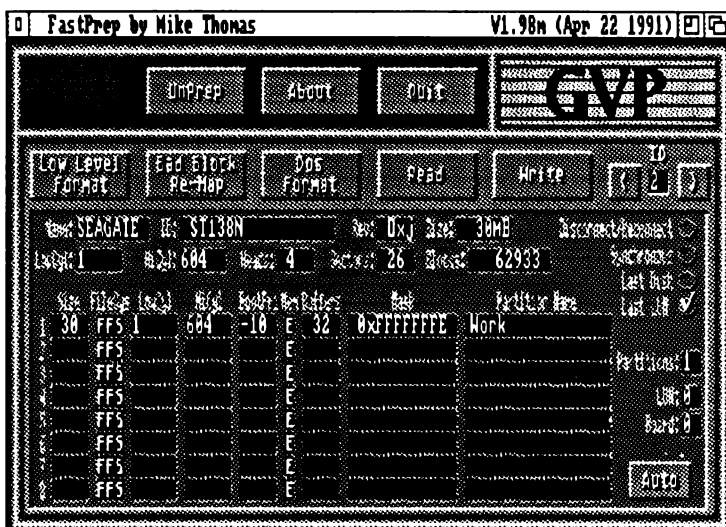


Figure 7.9 – Manual mode main screen.

You will notice that there are many buttons available on this screen. This allows the user total flexibility in the design of the partitions on each hard drive unit.

CAUTION: The functions Write, Bad Block Re-Map, Low Level Format, Dos Format and Unprep can and will change data on most hard drives! If you are in any way unsure of what to do, STOP. If your hard drives already contain data, exit FaaastPrep and back up your hard-drive before proceeding.

- Click on the *DOS Format* button to mount and format the hard drive. At this time FaaastPrep will offer to copy files to the newly formatted hard drive for you.

All the features relative to this procedure will be discussed below.

Addressing the Drive

Use these tools to locate the hard drive you wish to work with. Recall that SCSI provides for up to 7 devices per controller and that you could have 8 SCSI controllers. FaaastPrep provides a means to address any one of these devices.

Board ID



This text field displays the ID number of the current SCSI controller. Possible values are 0–7. Most users will only have one controller and it will be Board ID 0. In the Amiga, you could have up to 5 Series II SCSI controller cards sharing the Zorro bus. In this case, FaaastPrep would look at each card as it polled down the bus.

Unit ID



This text field displays the Unit ID number of the currently selected hard drive. Use the left or right arrow buttons (<, >) to cycle through all the drives connected to the SCSI bus, or type the desired ID number into the text field, itself. Possible values are 0–6. Most users build system- atically from 0 on up.

LUN

In certain cases (*like Bernoulli Master/Slave units, Adaptec, Omti and a few others*) more than 1 drive can be linked under a single SCSI ID. This is where LUNs come in.

LUNs have values from 0–7. This is similar to each SCSI device having a SCSI ID number from 0–7. The LUN gadget allows you to look at all the LUNs that might be assigned to the current SCSI ID. Devices capable of supporting LUNs are rare, so most users will want to leave this set to 0.

Drive Data

When FaaastPrep polls a hard drive, it should find a set of data encoded on the drive that identifies its manufacturer, size and various other details. These will be reported in the Drive Data fields of FaaastPrep’s manual screen.



Figure 7.10 – Drive specific information readouts.

Name, Model ID and Revision

These are drive specific identifiers normally recovered by FaaastPrep in response to its inquiries. It is not unusual for non-alphanumeric or ‘garbage’ characters to appear in the Revision (*Rev*) slot.

Size

The total amount of space on the disk. It is calculated from the total number of available blocks times the block size minus the cylinder or cylinders needed to store the RDB data, and then rounded down to a whole number.

Early versions of FaaastPrep incorrectly assumed all blocks to be 512-bytes long. Bernoulli drives typically have 256-byte blocks.

LowCyl, HighCyl, Heads, and Sectors

NOTE: The following four values are editable, providing that the unit in question is not currently prepped. These values should only be changed by an advanced user who is aware of their effect. They should otherwise be left ALONE.

CAUTION: The settings for the following mountlist parameters are LOGICAL, and not necessarily the PHYSICAL parameters for the drive. They ARE critical to AmigaDOS in determining what block or blocks it requests from the drive. These values are editable, but loss of data is CERTAIN unless you are confident that you know what you are doing.

The original GVP Prep software may not have matched the drive's Head/Sector parameter data when prepping a drive. This has been seen in some SyQuest cartridges prepped in 1.0 (before full removable-media support) and some of the advanced autoboot prepped disks. GVP recommends that these disks be backed up, unprepped, and then re-prepped with the Automatic OR Manual mode, along with any new cartridges added to your library. This is to make all of your cartridges uniform in their DOS structure. Some fixed hard disks may also have this problem. Back Up your data to be sure!

Low Cylinder

The lowest logical cylinder that a partition can use.

High Cylinder

The highest logical cylinder that a partition can use.

Heads

The number of logical heads on the drive. The number of heads always corresponds to the number of *sides*.

Sectors

The number of logical sectors per track.

Blocks

The total number of usable blocks on the drive. Defined in most cases as 512-byte blocks. The *Size* window for each partition is calculated from this value as described above.

Drive Operations

Once we have identified the drive we wish to work on, the following tools allow us to perform low level disk initialization and maintenance tasks.

CAUTION: Any of the following operations, when selected, will affect the drive whose ID is displayed in this text field. Always be sure that you are working on the correct drive!

Unprep

Unprep will clear out the currently selected SCSI disk's RDB block. When you click on this button, you will be asked if you are sure. If you continue, the block on the drive where its particular configuration settings were recorded will be erased, preventing it from being automatically mounted or booted.



Unprep will not disturb any data that may be present, however. All programs and files will still be usable, as long as you can mount the drive in some other fashion.

If you can recreate the original partition information (*by referring to the appropriate mountlist file, for instance*) and use the “Write” button to restore it to the drive’s RDB, your drive will autoboot once again.

Low Level Format

Sends the SCSI command for Low Level format to the current drive. A Low Level format operation is a manufacturer’s standard way to prepare a brand new hard disk to receive implementation specific structures (*like blocks and tracks, etc.*). Before you can Prep or AmigaDOS format a new drive, it must be Low Level formatted.



CAUTION: This command will destroy all data on the hard drive!



Figure 7.11 – Low Level format requester.

Interleave

The *Interleave* setting corresponds to how the controller (*on the hard drive, itself*) reads the drive. An interleave of 1:1 means that the drive reads consecutive blocks when loading a file. An interleave of 2:1 means that the drive reads every *other* block, etc. FaaastPrep defaults to an interleave of 1:1.

read accesses, it will be marked as 'bad' and mapped as unavailable for data storage. Mapping out bad blocks may seem like a reduction in storage capacity, but it is better to get by with fewer bytes, than to have valuable data files corrupted or lost, due to a block failure.

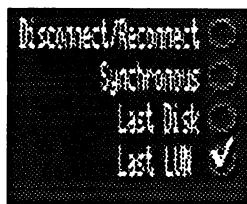
NOTE: Bad Block remaps may take quite a long time, depending on the storage capacity of your drive. Be prepared to wait an hour or more. As noted previously, ALWAYS Bad Block remap a removable cartridge.

Partition Operations

Both Low Level formatting and Bad Block remapping operate on a drive, regardless of any partition or other Amiga-oriented settings. The device is treated at a very low, hardware level. The remaining operations, however, require you to decide how many partitions you wish to create on your drive and to fill out the appropriate text fields in the partitions list.

Flags

Because SCSI devices may be other than hard drives, there are a number of items we can set, to optimize the way the GVP controller deals with them. These "Flags" often have a singular application. Most users will not have to bother with changing them.



The settings of these flags will be recorded on the RDB when FaaastPrep formats and preps the drive. They will be read and interpreted by the controller at each reboot.

Disconnect/Reconnect

When this flag is set, indicated by a displayed checkmark, DC/RC protocol is enabled for the current drive. This allows overlapping commands to be sent over the bus. Bandwidth is improved, resulting in faster reads and writes. The default setting is off, due to implementation bugs in several drives. Some notable examples of these are Seagate, which will cause extended delays during the light-grey screen boot period and SyQuest which may bog down, causing transfer rates to become as slow as floppy drives.

NOTE: DC/RC works well when dealing with tape units. One exception is the WangTek 150mb tape unit, which has a firmware bug that will cause bus errors if enabled. Since you cannot set a flag on the tape unit, the GvpScsiCtrl program on the install disk can tell the driver to disable or enable DC/RC as needed. See below for the syntax for the GvpScsiCtrl command.

Synchronous

When this flag is set, indicated by a displayed checkmark, synchronous transfers of data would be allowed to this drive. This feature is not implemented in any current GVP driver, and is provided for compatibility with the RDB standard, only.

Last Disk

When this flag is set, indicated by a displayed checkmark, the SCSI driver is instructed not to search for any more units after the current one. The driver will normally search from SCSI ID 0–6 until it finds a disk with this flag set. If no drives have the Last Disk flag set, your system will take considerably longer to boot.

If you should add a drive with a higher SCSI ID than the current Last Disk, you must unset this flag and Write out a revised RDB to the

drive. You should then make sure to set the Last Disk flag for the higher numbered unit. See the section on the Board/LUN text boxes on how the SCSI driver reacts to this flag.

NOTE: The Last Disk feature is present for historical reasons. In recent versions of the GVPScsi driver, the Last Disk flag is ignored.

Last LUN

When the Last LUN (*Logical Unit Number*) flag is set, indicated by a displayed checkmark, it will inform the SCSI driver that this is the Last LUN for this SCSI ID number.

As with SCSI IDs ranging from 0–7, each ID can have LUNs 0–7 associated with it. Most single fixed hard disks will respond only as LUN 0, as there is only a single unit. Seagate drives, however, will respond to all LUN polls and this will extend the boot delay period.

Setting Partitions

When the drive has been selected and all relevant flags set, it is time to specify the number of partitions you want and to tell FaaastPrep how to allocate space. Before proceeding with Partition operations such as DOS Formatting and Prepping, you must be sure to enter the desired number of partitions as described below.

Auto-Calculation

FaaastPrep defaults to an Automatic mode of calculation. When you specify a number of partitions, it will automatically divide the available hard disk space among these partitions. As you make changes to the size values of one partition, the Auto-Calculate feature will adjust the size values for the remaining partitions.

Auto

If you choose to perform your own calculations, click the **Auto** button to deselect it and disable this feature.

Number of Partitions

Partitions: 1

The next requirement is to tell FaaastPrep how many partitions you want to create on the selected drive. Click in the Partitions: text field and enter a value. You must create at least one, but can have as many as 8 separate partitions. You may choose to use multiple partitions to organize your programs and data files, or to keep everything in separate directories (*drawers*) within a single partition.

If the Auto-Calculate feature is enabled, FaaastPrep will automatically divide the amount of available space on the drive evenly among the specified partitions.

NOTE: Some drive types, like removable media drives (SyQuest, Bernoulli and Ricoh) should only be used with one partition.

Partitions List

The section below explains the fields in the partition block. Refer to the figure below throughout this discussion to familiarize yourself with the location and contents of these fields.

	Size	File Sys	Label	Model	Boot Pri	Part. #	Buttons	Hex	Partition Name
1	10	FFS	1	202	-10	E	32	0xFFFFFFFF	DH0
2	10	FFS	203	404	-64	E	32	0xFFFFFFFF	Work
3	10	FFS	405	604	-64	E	32	0xFFFFFFFF	Play
4		FFS				E			
5		FFS				E			
6		FFS				E			
7		FFS				E			
8		FFS				E			

Figure 7.12 – FaaastPrep's manual mode partition list.

In all cases, changes can be directly entered by clicking in the appropriate field with the mouse pointer. The *FileSystem* and *Memory Type* selection fields will cycle, automatically, through the available options. Clicking in the other fields will activate a text entry cursor in them. You may change these by typing the new values and striking the return key. The cursor will advance right to the next field. In this way, you can cycle through the entire Partition List.

Size



The capacity of the partition, in megabytes. This number will be equal to or less than the total number of bytes available. If you have a 65 Megabyte drive, for instance, and have already dedicated 40 Megs to the first partition, partition 2 can contain no more than 25 Megabytes.

When you first specify the *Number of Partitions*, FaaastPrep will automatically enable that many fields in the Partitions list. If the Auto button is enabled, the drive's total capacity will be divided evenly among the specified partitions and this value will be displayed in the size field for each partition in the list.

File System



This field allows you to specify the file system to use for this partition. Choices are Old File System (*OFS*), Fast File System (*FFS*) and Alternate File System (*AFS*). The *Old File System* is needed for AmigaDos 1.2 systems that do not support Auto-booting from hard disk. The *FastFileSystem* is FaaastPrep's default; it's fastest, and recommended for all users of Workbench 1.3 and later. *AFS* is reserved for future use, and is not currently supported.

Low Cylinder



The Low Cylinder value lets you set the starting cylinder for the partition. In cases of multiple

partitions, this field takes its value from the previous partition's *HiCyl* plus 1, or from the Lowest available cylinder beyond the drive's partition block.

High Cylinder

This field carries a value for the ending cylinder of the current partition. This text box gets its value by adding the partition's allotment of cylinders to the current partition's *LowCyl* value.



Boot Priority

The partition's boot priority can be modified by altering the value in this text field. If you want your Amiga to boot from this partition, set this value to -10. Set all other partitions to a lower value. The lowest allowable Boot Priority is -128.



The default FaaastPrep value is -10, and the default for a previously prepped (*v1.0 or 2.x autoboot ROM*) drive is -5. At boot time, AmigaDOS selects the highest boot priority among the bootable disk available. The DF0: floppy drive has a priority of +5 with a disk inserted. The computer will boot from DF0: instead of the hard disk in this case. It is recommended that you never give your hard disk partitions a value higher than the DF0: floppy drive.

Memory Type

This setting determines the type of memory the controller card will allocate for workspace and buffers. Choices are *C*, for CHIP; *F*, for FAST; or *E*, for Either. When the default value of *Either* is specified, FAST memory, if any is present in the system, will be used.



Forcing the driver to use CHIP memory can be done, but it wastes valuable system resources and can lower disk performance. Similarly, you can force the GVP driver to use FAST memory, but be aware that you will not be able to access partitions set in this manner if you have no fast RAM.

NOTE: Using the Write option will also update the boot blocks from previously-prepped hard disks, keeping all data on that drive intact. Note that FaaastPrep has to assume certain things and some odd glitches might be found with SyQuest disks prepped under earlier driver versions. Some custom setups might cause problems, too. There may be an instance where the calculations made by the older prep software to determine numbers of sectors, numbers of cylinders and numbers of heads can differ from FaaastPrep's calculations.

DOS Format



Clicking the DOS Format button will mount and format each partition as specified in the partitions list in the lower portion of the screen. When this option is selected, FaaastPrep calls the AmigaDOS command *Format*, normally found in the *sys:System* drawer. DOS formatting prepares the drive to receive program and data files.

NOTE: If a partition name is already in use, FaaastPrep will append an extra letter to the partition name as it is mounted.

When FaaastPrep formats and mounts each partition on the hard-drive, it creates a file called “mountlist” in the *RAM:* Drive. This file is also written to the partition itself. This file should be copied to a storage diskette for safekeeping.

In the event that the RDB or partition blocks become corrupted, and you are not able to autoboot or automount the drive, the mountlist may be used to manually mount the drive. A suggested place to store these mountlists is on a copy of the GForce030 disk.

Copying disks to the hard drive

When FaaastPrep has finished formatting the hard disk, you will be asked if you want to copy any floppies to the it.

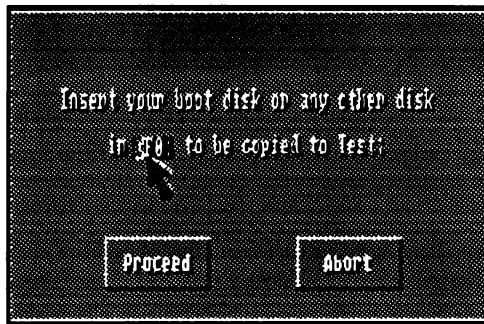


Figure 7.13 – Disk copy requester.

If you wish to copy files from a location other than DF0:, you may change this by clicking the left-mouse button on the word “DF0,” as shown above. Type the name, including the colon (:), and press return. This may be another floppy drive, or any other device mounted on your amiga.

NOTE: You may also supply a complete pathname including subdirectories: DH3:Archives/BackupFiles/.

Then, click on the “Proceed” button. Any files that exist on the source will be copied to the partition just created. This is accomplished using standard AmigaDOS copy routines and will reproduce files on a from the source onto the hard-drive.

NOTE: FaaastPrep will not copy any copy-protected or non-standard format diskettes. If you have a program that installs itself on a hard drive, it is better to use that program instead of FaaastPrep. Such programs will often create their own directories or make specific assignments, and the FaaastPrep copy utility may not accomplish this.

If you have selected a floppy drive and there is no disk in the drive, AmigaDOS will prompt you to insert a disk. If you have selected a hard drive, the program will copy the contents of the other hard drive onto your newly prepped drive.

When the program has finished copying, it will ask if there are any other disks you wish to copy. You may continue copying as many disks as you wish, up to the capacity of the partition. When you wish to copy no more information, click "Abort."

FaaastPrep will repeat the prep/format/diskcopy procedure for each partition that you have entered into the Partitions List. When FaaastPrep has finished mounting and formatting all partitions, it will display a requester and wait for you to click the "Proceed" button.

Read

The Read button is useful for determining if a drive has previously been prepped. Clicking this will force the GVP controller to re-read the RDB mountlist data from the current drive into FaaastPrep. This is also useful if you altered data on the screen, haven't yet used the 'Write' button and want to start over again.



If no information about the drive appears in the *Drive Data* fields at startup, click on the Read button. In most cases, FaaastPrep is able to identify a SCSI device by locating certain data encoded on the drive by the its manufacturer. Sometimes, there is no such data available (*as in the case of a Tape cartridge drive, for instance*).

About

Pressing the About button lets you know a little about FaaastPrep, and who wrote it.



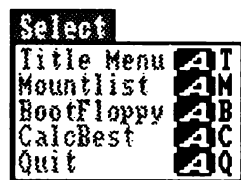
Quit

You can use this button, instead of the close button, to exit FaaastPrep, if you wish.



Title Bar Menus

There is one title bar menu on the Faaast-Prep Manual Mode screen: *Select*.



Title Menu

This option exits the manual mode screen and returns to FaaastPrep's main screen. The keyboard shortcut for Title Menu is *Right-Amiga-T*.

Mountlist

The Mountlist command writes a file called "mountlist" for the currently selected SCSI drive to the **RAM:** Drive. This file should be copied to a storage diskette for safe keeping.

In the event that the RDB or partition blocks become corrupted, and you are not able to autoboot or automount the drive, the mountlist may be used to manually mount the drive. A suggested place to store these mountlists is on a copy of the GForce030 disk. The keyboard shortcut to generate a mountlist is *Right-Amiga-M*

GVPCpuCtrl, when run from the CLI or Shell, performs different operations, depending on the *parameter* supplied. Each time the program is run, it will accept any of four possible arguments. These may be appended singly or as a command string with a space character separating arguments:

Template:

GVPCpuCtrl (argument) <return>

Arguments:

FASTROM – copies the contents of system ROM into 32-bit FAST memory and resets ROM vectors to point to this new copy.

NOFASTROM – resets ROM vectors to point to the Amiga's ROM chips and frees any FAST memory previously reserved for FASTROM.

BOOT68000 – Attempts to reboot the computer into native 68000 operation. This works with Amiga 2000 or 500 based accelerators, only. If run on an Amiga 3000 based system, this argument will reboot the machine under G-Force accelerator control.

Examples:

Note: If you have not already done so at installation, use your favorite text editor to enter this command line somewhere near the top of the file `s:startup-sequence`.

GVPCpuCtrl FASTROM

Variants:

GvpScsiCtrl -m

The argument -m, in this case, stands for “*mount*.” This form of the command will poll each device connected to the SCSI bus and attempt to mount any it finds. When run from the CLI, *GvpScsiCtrl -m* will dispatch a task and then return control to the CLI.

GvpScsiCtrl -r

This form of the command is quite similar to the above. It will return control immediately. It may be more compatible in certain situations. In this case, the -r argument stands for “*rescan*.”

GvpScsiCtrl -s

This form of the command will cause the SCSI driver to scan all the drives connected to it, and attempt to mount them. It differs from the previous forms in that it will not return control of the CLI until all devices return successfully mounted. The argument -s, in this case, stands for “*sticky rescan*.”

If this command is used, for example, in the *startup-sequence* to ensure that a removable media cartridge will be recognized as soon as it is inserted, the machine may never boot. This situation can be remedied by using the AmigaDOS *Run* command:

```
RUN >NIL: GvpScsiCtrl -s
```

This will spawn a separate task that will wait until all units are mounted, at which point it will terminate. In the meantime, the original calling process will continue to execute.

NOTE: When the GvpScsiCtrl icon is clicked on the Workbench, it operates as equivalent to GvpScsiCtrl -s.

Disconnect/Reconnect

Under certain circumstances the SCSI bus may not operate properly with disconnect enabled for every device. The usual symptoms are that the Amiga will issue “phase-error” warnings or simply hang-up during a SCSI transfer.

Even though hard disks can be easily prepped to automatically disable this feature, devices without a RDB — Tape drives, for example — must be treated differently. In such instances, you can use GVP-ScsiCtrl to disable disconnect for individual devices.

```
GvpScsiCtrl <Unit ID> DCOFF
```

Issue the above form of the command, replacing <Unit ID> with the SCSI ID of the device in question. For instance, if a tape drive is connected as ID #6, typing the command:

```
GvpScsiCtrl 6 DCOFF <return>
```

will disable disconnect for that device. Then, whenever the tape drive is being read from or written to, no other SCSI operations will be allowed to compete.

CPU/SetCPU

You can dynamically control the G-Force '030 Combo board's instruction and data caches using the AmigaDOS 2.0 comand CPU (*SetCPU*, under *Workbench 1.3*). This CLI instruction is documented in the *Commodore AmigaDOS manual 3rd. Edition*.

NOTE: SetCPU was never a part of the Workbench 1.3 distribution. It was released separately by Commodore and usually distributed along with accelerator products. We have

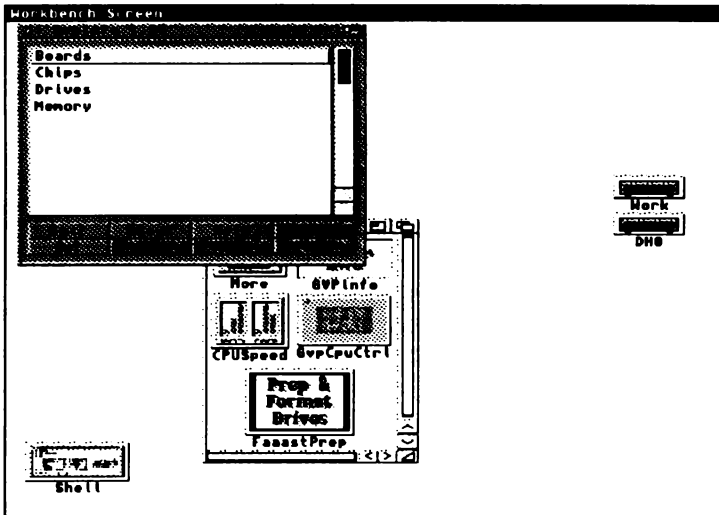


Figure 8.1 – GVPIInfo window.

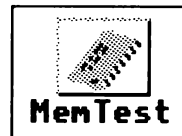
GVPIInfo has a special flag for CLI use. When launched from Shell or CLI as:

```
GVPIInfo SPEED <return>
```

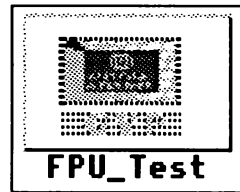
the *Chips* option will run a performance test on your main processor chips and display the result.

MemTest

When you double-click on the MemTest icon in the Utilities drawer, the G-Force '030 board will seek out all memory resources present in your system. It will then run a 5-pass *read/write/compare* test to determine if any of the individual memory cells is faulty — sign of a bad memory chip.



The FPU_Test utility will perform a series of complex floating point arithmetic calculations to determine the performance efficiency of your 68882 math chip (*assuming one is installed*). If there is no math chip installed, the program will exit.



FPU_Test can be initiated by double-clicking on its icon. The program requires several support files to be present in a subdirectory called **GVPUtils**. These are in their proper locations on the original GForce030 distribution disk. If you should copy your utilities files to a hard disk, be sure that the GVPUtils directory is copied as well.

CHAPTER 9.

THEORY OF OPERATION

68000 vs 68030

The Amiga 2000, as designed, uses a Motorola 68000 16/32-bit microprocessor running at a 7.14 MHz clock speed. This powerful computer chip provides basic control over all the Amiga's components. While the 68000 chip uses 32-bit "registers" internally for the representation of data, it is connected to the circuit board (and all other external devices) by a 16-bit wide "bus." This narrow bus architecture results in a performance bottleneck, as all 32-bit data values must be broken in half and sent out on the bus as two 16-bit "words."

The G-Force '030 Combo's 68030 processor is a full 32-bit microprocessor. Its internal data representation uses 32-bit registers and it is connected to the other components on the Combo board via a 32-bit wide bus. Data that can be exchanged between the 68030 and any Combo board components (*like the Floating Point coprocessor, and 32-bit wide RAM*) can be moved in full 32-bit words providing a 2 to 1 increase in throughput.

Clock Speed

In addition, the G-Force '030 Combo employs its own clock running at much greater rates than a stock Amiga's. A computer's system clock determines the rate at which data can be transferred. Each time the clock crystal "beats," the processor's registers can be changed. On a stock Amiga, with a 7.14 MHz clock, that provides a maximum of 3,580,000 data movements per second. A G-Force '030 Combo, clocked at 50 MHz, by contrast, can achieve up to 25 Million data movements per second.

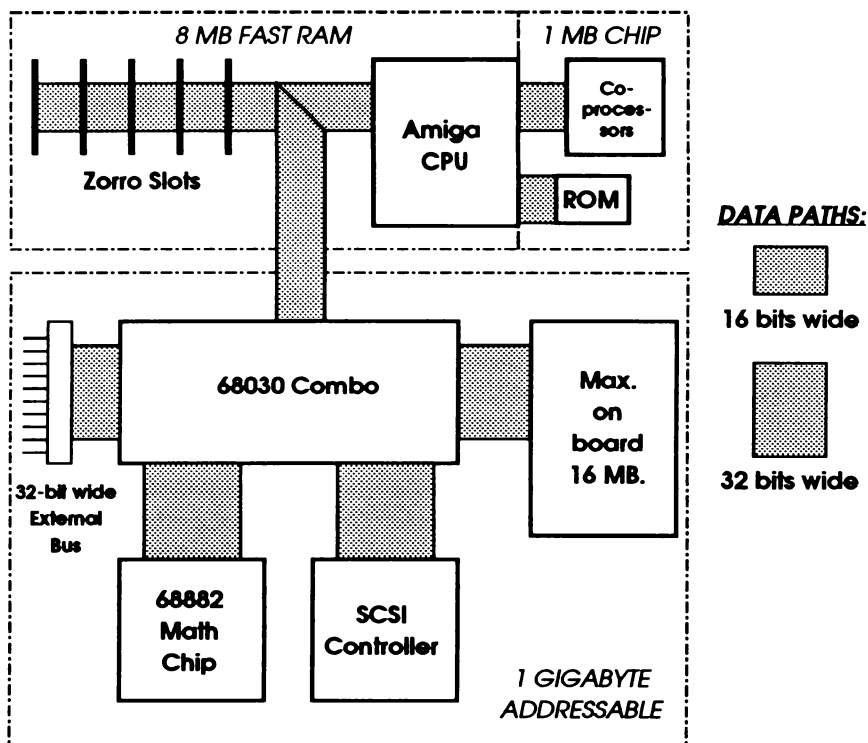


Figure 8.1 – 730 Combo board block diagram.

SCSI Controller

Many SCSI hard drive controllers on the market employ Direct Memory Access (*DMA*) technology to load data straight into RAM. All non-Combo board controllers (*including GVP's own Series II cards*) must still pass their data across the 16-bit wide system bus. The SCSI controller built into the Combo board has direct, 32-bit wide access to the card's 32-bit memory resources. 32-bit wide access to RAM means that a given quantity of data can be loaded twice as fast as designs employing the 16-bit bus.

68882 floating point unit installed. Users who buy these considerably less expensive products will be encouraged to know that a 68882 (*or the older, less effective 68881*) chip can be added easily at any time.

Relocating System ROM

Most of the key instructions that the Amiga Operating System uses to process data reside in a set of Read Only Memory (ROM) chips on the Motherboard. When a program makes a library call, the computer looks up the proper piece of code in the system ROM. Unfortunately for most operations, ROM calls are not terribly efficient. The ROM chips, themselves, are much slower than Random Access Memory.

Fortunately for Combo board users, The entire contents of the System ROM can be copied into 32-bit RAM dataspace. Then, when a program calls on ROM for a key operation, the entire 32-bit value can be retrieved with a single access.

Copying the System ROM is easily accomplished using either the *SetCPU* utility (*or CPU, under Workbench v. 2.04*) for 68030s with a MMU or the *GVPCpuCtrl* utility (*included on the Combo Board distribution disk*) for 68EC030s without a MMU. The procedures for using both these programs are described in *Chapter 8 – Other Utilities*.

Combo Board Operation

Upon power-up or system reset, the 68030 acquires control of the Amiga's processor bus by requesting bus access from the 68000. Once in control, the Combo board is free to run the machine, fetching instructions and data at its own clock rate, and making use of its internal caches and 32-bit data path. Since the Combo board never surrenders bus control, the 68000 is prevented from reclaiming mastery over the machine.

GVP provides a custom circuit to synchronize all accesses to the Amiga's processor bus. Operations that needn't interface with the main Amiga bus (*e.g.: calculations and DMA SCSI data transfers*) can be performed at the maximum speed of the processor. Operations that require cooperation from the Amiga's system bus (*e.g.: printing through the parallel port or display of graphic imagery*) will be synchronized to the Amiga's bus speed.

Backward Compatibility

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APPENDIX A.

BRIDGEBOARD USE

Users of Amigas equipped with the Commodore XT or AT BridgeBoard have their own particular installation needs. In most cases, the installation software and documentation that comes with the BridgeBoard package should be used to set up hard drive partitions and transfer facilities for use with the G-Force accelerator.

However, the G-Force system provides a way to use Amiga resident hard drives as PC *virtual drives*. In this way, users who cannot afford a separate, MS/DOS drive may dedicate a partition on their AmigaDOS hard drive for PC use. The Amiga will maintain this PC virtual drive by treating it as a single, large, AmigaDOS file. The BridgeBoard will be given full access to this file, and will see it as a properly formatted MS/DOS partition.

To create such a virtual drive, you must first have installed the G-Force Combo board and XT or AT BridgeBoard. Follow the installation procedures described in the Commodore BridgeBoard manual.

Create a partition on your hard drive for dedicated PC use and format it under AmigaDOS. Refer to the *FastPrep* chapter for complete details on this process. We recommend that this partition be between 5 and 50 Megabytes, depending on the total amount of storage you have to spare. **Users of MS/DOS 3.2 and earlier may use partitions no larger than 32 Megabytes.** Remember that any hard drive space allocated to BridgeBoard use cannot be used by AmigaDOS.

InstallBB

GVP has included a program called *InstallBB* to simplify the process of building a BridgeBoard virtual drive system. When you double

key enters the line into the configuration file. Typing mistakes can be corrected using the backspace key as long as you have not entered the information.

What to type	What it means
files = 20 <return>	Maximum number of open files
buffers = 20 <return>	Memory allocated for drive speed efficiency
device = jdisk.sys <return>	Loads PC/Amiga translator
device = ansi.sys <return>	Loads common graphics driver

Terminate this data entry by typing ^Z (*Ctrl and z keys*) and then striking Return. The new configuration file will be written to disk and a confirmation message will appear on the display.

- 4) Reboot the XT or AT BridgeBoard using the PC convention (*Ctrl, Alt and Del*). When the **A>** prompt has returned, you are ready to create the virtual drive. You will need to know the following:
 - Reserved AmigaDOS partition designator (*e.g.: DH1: PC0:, etc.*)
 - Filename for AmigaDOS to manage the virtual drive by (*e.g.: pcdrive, myvdisk, etc.*)
 - Virtual drive size in kilobytes (*i.e.: 25 MB = 25000, 15 MB = 15000*)
 - MS/DOS drive designator (*e.g.: C, D, E, or F*)
- 5) Create the virtual disk partition by issuing the appropriate **jlink** command. Provide parameters appropriate to your own configuration. The following examples are based on the data instances above:

What to type**What it means**

echo off <return>	This command limits output to the screen
cls <return>	This command clears the screen
jlink c: DH1:pcdrive <return>	This command re-links virtual drive
set comspec = c:\command.com <return>	This command sets DOS to virtual drive
Path=c:\ <return>	This command sets the path to virtual drive
c: <return>	This command changes current directory to virtual drive
^Z	This command terminates file entry

- 8) Condition the virtual DOS disk by filling it completely with dummy files. These can be any DOS applications or data copied from floppy or other hard disk partition. The idea, here, is to write actual MS/DOS format data into the Amiga virtual disk file. Doing so expands the virtual disk file to its full allocated size, and helps prevent future read or write errors.

When the virtual disk is completely filled, you can erase all the dummy data and replace it with your own applications and files.

- 9) This completes the virtual DOS disk installation. When working with an Amiga-based virtual DOS disk, it is always a good idea to practice the following data security procedure.
- Always **UNLINK** the drive before rebooting or turning off your computer. **UNLINK** is accomplished using the following instruction:

```
jlink c: /u
```

Steps for Janus Software Version 2

It is much easier to create a virtual DOS disk when using the Version 2 Janus libraries. This version includes its own set of utilities for working with virtual disk drives.

- 1) Place a copy of your MS/DOS System disk (#1) in the 5.25" boot drive. Reboot your computer by simultaneously pressing Ctrl, and the Left and Right Amiga keys. Click twice on either the PCcolor or PCmono icon, whichever is appropriate to your BridgeBoard configuration. The window that opens will be a MS/DOS command screen.
- 2) At the **A>** prompt, type

FDISK <return>

You will be presented with an options menu.
- 3) Select **Option #1- Create a DOS drive partition**. A new list of options will replace the existing list.
- 4) Select **Option #1 - Create a primary DOS partition**. This means that you wish FDISK to make the virtual DOS disk a DOS bootable partition.
- 5) Specify the AmigaDOS partition you have reserved for virtual DOS disk use as FDISK's *active* partition and hit **return**.
- 6) When FDISK has finished "prepping" your virtual DOS partition, hit the *Escape (Esc)* key to exit. Then, reboot the BridgeBoard by simultaneously holding down the *Ctrl, Alt and Del* keys.

APPENDIX B.

CUSTOMER SERVICE

GVP provides customer support for its hardware and software products from 9:15 a.m. to 6:00 p.m. Eastern Time in the United States at (215) 337-8770.

Wherever possible, callers should determine that the problem they are reporting is repeatable (*i.e.: it happens more than once*), and be able to describe in detail the particular symptoms and system configuration in use.

CAUTION: Because the '030 Combo board contains delicate components that are subject to damage from shock or short circuits, use good judgement when attempting to repeat a failed operation. Under no circumstance should a machine be powered up if it has shown evidence of electrical short circuiting. Doing so can cause irreparable damage to the Combo board, your Amiga, or both.

GVP can also be reached via FAX, at (215) 337-9922 or by post at our U.S. mailing address:

Great Vallley Products, Inc.
600 Clark Ave.
King of Prussia, PA 19406

APPENDIX C.

PROBLEM REPORTING FORM

When calling GVP Customer Service, please take the time to complete this form. Telephone support personnel will be better able to assist you if you can provide this detailed information. Users may, alternately, FAX a copy of this form to GVP at **(215) 337-9922**.

Name: _____

Date: _____

Address: _____

Telephone Number: _____

Product: _____

Serial Number: _____

Revision: _____

Describe the problem in terms of symptoms and the conditions under which it occurs: _____

Machine Configuration

Amiga Model: _____

Motherboard Revision: _____

Kickstart (ROM) Version: _____

Workbench Version: _____

Chip Set Version: _____

Amiga CPU Installed: _____

Amiga clock speed: _____

Note any and all expansion products installed (*including competitors' products*):

CPU Slot: _____

Expansion Slot #1: _____

Expansion Slot #2: _____

Expansion Slot #3: _____

Expansion Slot #4: _____

Expansion Slot #5: _____

Video Slot: _____

PC Slot #1: _____

PC Slot #2: _____

PC Slot #3: _____

PC Slot #4: _____

Data Drives Attached:

List the Unit ID numbers, manufacturers and capacities of all hard drives attached to your system; also any floppy, tape or other devices:

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G-FORCETM **030** **COMBO**



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